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January 30, 2012

BY FEDERAL EXPRESS

Michael A. Mintzer
Assistant Regional Counsel
New York/Caribbean Superfund Branch
Office of Regional Counsel
U.S. Environmental Protection Agency, Region II
290 Broadway, 17th Floor
New York, NY 10007-1866

Re: Newtown Creek Superfund Site
Kings County and Queens County, New York
Response of Pfizer Inc. to the Request for Information Pursuant to Section 104(e)
of the Comprehensive Environmental Response, Compensation, and Liability Act,
42 U.S.C. §§ 9601-9675 (October 25, 2011)

Dear Mr. Mintzer,

Enclosed please find Pfizer Inc.'s response to the above-referenced Request for Information,
along with five Exhibits containing supporting materials.

Sincerely,

Merrill Fliederbaum

Assistant General Counsel
EHS-Legal, Pfizer Inc.

Enclosures

cc: Ms. Caroline Kwan
Remedial Project Manager
New York Remediation Branch
Emergency and Remedial Response Division
U.S. Environmental Protection Agency, Region II
290 Broadway, 20th Floor
New York, NY 10007-1866

**RESPONSE OF PFIZER INC.
TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S
REQUEST FOR INFORMATION, DATED OCTOBER 25, 2011 – NEWTOWN CREEK
SUPERFUND SITE, KINGS COUNTY AND QUEENS COUNTY, NEW YORK**

Pfizer Inc. ("Pfizer") hereby responds to the October 25, 2011 Request for Information ("Information Request") from the United States Environmental Protection Agency related to the Newtown Creek Superfund Site located in Kings County and Queens County, New York. Via an email dated November 7, 2011, Mr. Michael Mintzer of EPA agreed to extend the deadline for Pfizer to reply to the Information Request until January 31, 2012. In responding to the Information Request, Pfizer has undertaken a diligent and good-faith search for and review of information and documents in its possession, custody, and control. That said, Pfizer does not represent or warrant that all responsive documents have been identified during this review and Pfizer reserves the right to voluntarily supplement its responses at any time should additional information become available.

Pfizer expressly denies any liability for alleged response costs, damages to natural resources, restoration costs, or other damages or costs arising out of alleged contamination of the Newtown Creek Superfund Site. Nothing in the following responses to the Information Request should be construed as a waiver of any defenses that may be available to Pfizer, including but not limited to defenses under any state or federal statute, judicial decision, rule, regulation or policy.

GENERAL OBJECTIONS TO THE INFORMATION REQUEST

1. Pfizer objects to the Information Request to the extent it seeks information that is not relevant to alleged contamination of the Site and is not reasonably calculated to lead to the discovery of relevant information.
2. Pfizer objects to the Information Request to the extent it seeks information beyond the scope of the categories of information set forth in Section 104(e)(2) of CERCLA. Section 104(e)(2) authorizes the President to require information related to: (1) "the identification, nature, and quantity of materials which have been or are generated, treated, stored, or disposed of at a vessel or facility or transported to a vessel or facility"; (2) "the nature or extent of a release or threatened release of a hazardous substance or pollutant or contaminant at or from a vessel or facility"; and (3) "information relating to the ability of a person to pay for or to perform a cleanup." Requests directed at information outside the above categories are beyond EPA's authority to require.
3. Pfizer objects to the Information Request to the extent it seeks information protected by the attorney-client privilege, the attorney work product rule, or any other applicable privilege, protection, doctrine, rule, or immunity that protects such information from disclosure, and Pfizer is not providing such information. In the event that a privileged or protected document has been inadvertently included among the documents produced in response to the Information Request, Pfizer asks that any such document be returned to Pfizer immediately.

4. Pfizer objects to the Information Request to the extent it seeks information or documents already in the public domain or already in the possession of EPA or any other federal agency.
5. Pfizer objects to the Information Request, including the requests for production of documents contained therein, to the extent it is arbitrary and capricious, an abuse of discretion, or otherwise not in accordance with the law as contained in §104(e)(2) of CERCLA.
6. Pfizer objects to the Information Request, including the requests for production of documents contained therein, to the extent it seeks to impose on Pfizer an obligation to seek or obtain information or documents from third persons, including but not limited to former employees or agents, or which otherwise are not in the possession, custody, or control of Pfizer. Pfizer is providing information within its possession, custody, and control.
7. Pfizer objects to the Instructions, Definitions and other purported requirements contained in the Information Request to the extent that they impose obligations greater than those otherwise required by law. In particular, Pfizer objects to EPA's position in the Certification, which purports to require Pfizer to supplement its responses to the Information Request. EPA lacks statutory authority under CERCLA to require ongoing supplementation of its Information Requests. While EPA lacks such authority, Pfizer reserves the right to voluntarily supplement or amend its responses to the Information Request. Pfizer also objects to the purported requirement that a certification accompany the response. EPA lacks the authority to require the certification.

Subject to and without waiving or limiting the forgoing objections, Pfizer responds as follows.

RESPONSES AND SPECIFIC OBJECTIONS TO THE INFORMATION REQUEST

Section 1.0 Company Information

1. **Company Identification: Provide the following information with respect to the Company.**
 - a. **The full legal, corporate name and mailing address.**

Pfizer Inc.
235 East 42nd Street
New York, New York 10017-5755

- b. **The state and date of incorporation, the date of qualification to do business in the State of New York, and the agents for service of process in the state of incorporation and in New York State.**

Pfizer was incorporated in Delaware on June 2, 1942. The agent for service of process on Pfizer in Delaware is The Corporation Trust Company, Corporation Trust Center, 1209 Orange Street,

Wilmington, Delaware 19801. The date of Pfizer's qualification to do business in the State of New York is June 25, 1951 and the agent for service of process in the state of New York is CT Corporation System, 111 8th Avenue, 13th Floor, New York, New York 10011.

c. The Chief Executive Officer or other presiding officer of the entity and the mailing address of that officer.

Ian C. Read
President and CEO
Pfizer Inc.
235 East 42nd Street
New York, NY 10017-5755

d. If the Company is a successor by merger, acquisition or other activity to any other entity, identify each such entity and describe the nature of the succession. Please provide purchase and sale documents that related to such merger, acquisition or other activity including any indemnities associated with such activity.

Pfizer's subsidiaries are identified in Exhibit 21 of the Company's annual Form 10-K, which is publicly available on the SEC website. Because Pfizer has over 100 subsidiaries, it would be unduly burdensome and unreasonable to require Pfizer to provide the requested information.

e. If the Company is a subsidiary, division, branch or affiliate of another corporation or other entity, identify each of those other entities and those entities' Chief Executive Officers or other presiding officers. Identify the state of incorporation and agents for service of process in the state of incorporation and in New York State for each entity identified in your response to this question.

N/A

2. Future EPA Communications: If the addressee of this letter requests that future communications from EPA regarding the Site be sent to a particular individual or office, provide the name, address, telephone number, e-mail address and capacity of such individual or office.

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Environment, Health and Safety – Legal
Pfizer Inc.
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Section 2.0 Owner/Operator Information

3. **Separately provide a brief summary of the Company's relationship to the Facility (see Definition number 10.a for "Facility") and each Other Newtown Creek Property (see Definition number 10.b for "Other Newtown Creek Property"), including:**
- a. **Nature of the Company's interest in the Facility and each Other Newtown Creek Property;**

Pfizer (known during the period in question as Chas. Pfizer & Co., Inc.) owned the Facility from 1924 until 1963. Pfizer did not identify any information or documents indicating that it or any affiliates ever held an interest in any Other Newtown Creek Property.

- b. **Corporate identity of any entity affiliated with the Company that holds or held such interest;**

See response to Question 3(a), above.

- c. **Address, Borough, Block and Tax Lot Identification and map or schematic locating the Facility and each Other Newtown Creek Property;**

Facility:

295 Lombardy Street
Brooklyn, New York
Block 2824 Lot 10

Maps of the Facility are included in Exhibit 1, which is enclosed with this response.

- d. **Dates of acquisition and date of disposition of interest and identity of transferor and transferee;**

Pfizer retained First American Title to perform a title search for the Facility. The report is enclosed herein as Exhibit 2. The title search indicates that Chas. Pfizer & Co., Inc. purchased the Facility from Bullion Realty Company, deed dated August 5, 1924 and recorded August 6, 1907. Chas. Pfizer & Co., Inc. sold the Facility to Scott Realty Co., deed dated August 28, 1963 and recorded September 5, 1963. A correction deed to Scott Realty Co., correcting the name of Chas. Pfizer & Co., Inc. and dated January 3, 1964, was recorded January 21, 1964.

- e. **Dates of operation and date of cessation of operation and identity of lessor, licensor or other person with paramount interest (e.g., property owner, prime leaseholder);**

Pfizer believes that the Facility was owned and operated by Chas. Pfizer & Co., Inc. from 1924 until 1963. Pfizer did not identify any information or documents indicating the existence of any other party with a paramount interest during that period.

- f. **The principal business and each other line of business conducted by the Company at the Facility and at each Other Newtown Creek Property; and**

Based on Pfizer's 1979 reply to the Eckhardt Survey (see Exhibit 3), Pfizer believes that the Facility was operated as a landfill used for the disposal of mycelium, a non-toxic fungus generated from the production of citric acid, and for the burning of packaging materials. See the response to Question 29(e) for a more detailed description of mycelium and the citric acid production process. Pfizer did not identify any information or documents indicating that any environmental analysis was conducted on the mycelium disposed at the Facility. However, Pfizer understands that the same citric acid production process was employed at Pfizer's facility in Groton, Connecticut. An analysis of the mycelium generated at the Groton facility indicated that it contained trace amounts of sodium ferrocyanide, a complex cyanide considered to be non-toxic. This analysis, which is enclosed herein as Exhibit 4, was conducted to examine the implications of beneficially reusing the mycelium as fertilizer by applying it to agricultural fields. The report concluded that the disposal of mycelium in this manner did not represent a risk to human health and resulted in inconsequential environmental impacts. Because the mycelium generated at Pfizer's Brooklyn Plant was generated through the same process employed at the Groton facility, mycelium disposed at the Facility may have contained trace amounts of sodium ferrocyanide. Pfizer believes that to the extent that there were trace amounts of sodium ferrocyanide in the mycelium disposed at the Facility, any impacts to human health and the environment would likewise have been *de minimis*.

Pfizer acknowledges the description of the Facility contained in the Final Environmental Impact Statement for the Kosciuszko Bridge Project, Appendix P (the description and location of this source can be found in the response to Question 48(b)), which asserts, without support, that "other possible hazardous wastes" may have been disposed at the Facility. However, Pfizer did not identify any other information or documents indicating that the Facility was used for anything other than the disposal of mycelium and the burning of packaging materials.

- g. Provide a copy of all instruments evidencing the acquisition or conveyance of such interest (e.g., deeds, leases, licenses, purchase and sale agreements, partnership agreements, etc.).**

Copies of those requested materials that are within Pfizer's possession, custody and control are included in Exhibit 2.

- 4. Identify all entities who concurrently with the Company exercise or exercised actual control or who held significant authority to control activities at the Facility, including:**
 - a. Lessees, sublessees, partners, joint venturers or holders of easements.**

Pfizer did not identify any information or documents indicating that any such parties existed.

- b. Contractors, subcontractors, licensees or licensors that exercised control over any materials handling, storage, or disposal activity.**

Pfizer did not identify any information or documents indicating that any such parties existed.

- c. Pipelines providing delivery of materials to, distribution within or shipment from the Facility;**

Pfizer did not identify any information or documents indicating that any such parties existed.

- d. Railroads or rail lines providing delivery of materials to or shipment from the Facility;**

Pfizer did not identify any information or documents indicating that any such parties existed.

- e. Truckers providing delivery of materials to or shipment from the Facility;**

Pfizer did not identify any information or documents indicating that any such parties existed.

- f. Barge service companies providing delivery of materials to or shipment from the Facility; and**

Pfizer did not identify any information or documents indicating that any such parties existed.

- g. Any other person with activities and/or easements regarding the Facility.**

Pfizer did not identify any information or documents indicating that any such parties existed.

- 5. Identify all current or prior owners that you are aware of for the Facility. For each prior owner, further identify if known, and provide copies of any documents you may have regarding:**

- a. the dates of ownership and operations conducted at such times;**

Pre 1907: Owned by Richard Willard and Katherine C. Willard; Facility operations unknown.

1907 – 1924: Owned by Bullion Realty Company; Facility operations unknown.

1924 – 1963: Owned by Chas. Pfizer & Co., Inc.; Facility operated as a landfill.

1963 – 1984: Owned by Scott Realty Co.; Pfizer believes that the Facility operated as a trucking terminal.

1984 – 1991: Owned by Morgan Realty Company; Pfizer believes that the Facility operated as a trucking terminal.

1991 – Present: Owned by Preston Trucking Company; Pfizer believes that the Facility is operated as a trucking terminal.

- b. any corporate or real estate affiliation between the Company and each such prior owner; and**

Pfizer did not identify any information or documents indicating that any such affiliation existed.

- c. release of hazardous substances, industrial waste, other waste including petroleum, at the Facility during the period that the prior owners owned the**

Facility with such details as you are aware of.

See response to Question 3(f).

6. **Identify all current or prior operators that you are aware of for the Facility. For each such operator, further identify, if known, and provide copies of any documents you may have regarding:**
- a. **the dates of operation;**
 - b. **any corporate or real estate affiliation between the Company and any prior operator of the Facility,**
 - c. **the nature of the operations at such times; and**
 - d. **release of hazardous substances, industrial waste, other waste including petroleum, at the Facility during the period that the prior operators were operating the Facility.**

See response to Question 5(a). Pfizer did not identify any other information or documents responsive to this question.

7. **Litigation and Administrative Activity:**
- a. **Has the Company or an affiliate been a party to any litigation, whether as plaintiff or defendant, where an allegation included liability for contamination of or from the Facility, any Other Newtown Creek Property or any other facility within 1,000 feet of Newtown Creek (whether or not owned or operated by the Company)? If yes, identify such litigation and its disposition, briefly describe the nature of the Company's involvement in the litigation and provide a copy of the pleadings and any final order.**

No.

- b. **Has the Company or an affiliate been identified by the U.S. Environmental Protection Agency or by any New York State or New York City agency as a party responsible for environmental contamination with respect to a facility located within 1,000 feet of Newtown Creek? If yes, state the Company's understanding of the basis for such notice of responsibility and provide a copy of any correspondence, orders or agreements between the Company and the governmental agency.**

No.

8. **Ownership of Newtown Creek: At the present time or at any past time, has the Company or any affiliate:**
- a. **Owned any portion of Newtown Creek or wetlands associated with Newtown Creek.**

Pfizer did not identify any information or documents indicating that any such ownership existed.

- b. Asserted control or exclusive rights to use any area of Newtown Creek or wetlands associated with Newtown Creek, for any purpose including, without limitation, dredging, filling, construction, maintenance or repair of any facility located in the waters, the associated wetlands or sediments, including, by way of example, bulkheads, rip rap, pipes, wharfs, piers, docking, loading or unloading facilities, cranes or over-water facilities.**

Pfizer did not identify any information or documents indicating that any such assertion of control of exclusive rights existed.

- c. If the answer to either subparagraph "a" or "b" of this paragraph is yes, please identify the areas owned or controlled, or over which the company has a right to use, provide an explanation of how and from whom the Company acquired such ownership or control, provide a copy of all title documents, leases, permits or other instruments where such right was derived, and describe all activities conducted pursuant thereto.**

9. Operations In, Under or Over the Waters or On the Sediments of Newtown Creek:

- a. Describe all activities at the Facility that were conducted over, on, under, or adjacent to, Newtown Creek. Include in your description whether the activity involved hazardous substances, industrial waste, petroleum or other waste materials and whether any materials were ever discharged, spilled, disposed of, dropped, or otherwise came to be located in Newtown Creek.**

Pfizer believes that mycelium, a non-toxic fungus generated from the production of citric acid, was disposed of at the Facility, which is adjacent to Newtown Creek, from 1924 through 1963. See response to Question 3(f). In addition, Pfizer believes that the Facility was used for the burning of packaging materials during the same period. Aerial photos (included in Exhibit 1) appear to indicate that portions of the shoreline of the Facility were filled during the period that Pfizer owned and operated the Facility. However, Pfizer did not identify any information or documents indicating that mycelium, packaging materials, or the residue from burned packaging materials were ever discharged, spilled, disposed of, dropped, or otherwise came to be located in Newtown Creek.

- b. Has the Company, or any affiliate, at any time, constructed or operated any facility in or over the waters or on the sediments of Newtown Creek, including any bulkheads, rip-rap, pipes wharfs, piers, docking, loading or unloading facilities, containment booms, cranes or other on-water or over-water facilities.**

Pfizer did not identify any information or documents indicating that any such in-water, on-water or over-water facilities were ever constructed or operated by the Company or any affiliate.

- c. Has the Company, or any affiliate, at any time constructed, operated or utilized any facility under the waters or sediments of Newtown Creek, including without limitation pipes, pipelines, or other underwater or under sediment facilities.**

Pfizer did not identify any information or documents indicating that any such underwater or under sediment facilities were ever constructed, operated or utilized by the Company or any affiliate.

- d. If the answer to subparagraph "b" or "c" of this paragraph is yes, please provide details including the facilities constructed or operated, the dates of such construction, replacement or major modification, whether there were discharges into the waters of Newtown Creek associated with construction or maintenance of such facilities, all permits associated with the construction or operation and the nature of the Company's authorization to construct or maintain such facilities in Newtown Creek including from whom the operating rights were obtained, and provide copies of relevant deeds, leases, licenses and permits.**
- e. Provide a summary of over-water activities conducted at the Facility, including but not limited to, any material loading and unloading operations associated with vessels, materials handling and storage practices, ship berthing and anchoring, ship fueling, cleaning, maintenance, or repair.**

Pfizer did not identify any information or documents indicating that any such over-water activities were conducted at the Facility.

- f. Utilized barges, tankers or other ships in any operations on Newtown Creek and, if so, provide details. With respect to barge, tanker and shipping operations,**
 - i. Identify all products and raw materials transferred to or from barges, tanks and ships and the dates of such operations;**
 - ii. Describe the method of transfer to and from barges or other ships during all periods of such activities;**
 - iii. Identify the types of barges or ships utilized and the depth of-the water where barges or ships were moored;**
 - iv. Describe barge, tanker or other ship cleaning operations, if any, including the cleaning methods that were used, how cleaning waste was handled; and**
 - v. Describe spill prevention controls that were utilized in delivery or pick-up of materials.**

Pfizer did not identify any information or documents indicating that any barge, tanker and shipping operations were conducted by the Company at the Facility.

- g. State whether any of the operations required to be identified above resulted in disposal or spillage of any materials into Newtown Creek or the re-suspension of any sediments of Newtown Creek. If the answer is a "yes" please provide details and documentation of such events.**

Pfizer did not identify any information or documents indicating that the disposal of mycelium or burning of packaging materials resulted in disposal or spillage of any materials into Newtown Creek or the re-suspension of any sediments of Newtown Creek.

10. **Identify each and every Other Newtown Creek Property (see Definition number 9.b for "Other Newtown Creek Property"), that your Company presently or previously owns (or owned), leases (or leased), manages (or managed), operates (or operated), controls (or controlled), or otherwise has or had rights to use, manage or operate, within the area extending one-thousand feet from the shoreline of Newtown Creek (Definition number 1 above defines "Newtown Creek" to include all tributaries or branches of Newtown Creek).**

Pfizer did not identify any information or documents indicating that it or any affiliates ever holds or held any such interest in any Other Newtown Creek Property.

Section 3.0 Description of the Facility

11. **Provide the following information for the Facility, including a description responsive to each question and depictions by map, drawing, survey or otherwise:**
- a. **Address and borough, block and lot;**

See response to Question 3(c).

- b. **historic photographs, including without limitation, aerial photographs, photographs showing construction, industrial or commercial processes, sanitary and storm sewer systems, outfalls, indoor and outdoor storage of materials or products, and photographs during construction;**

Aerial photographs are included in Exhibit 1. Pfizer did not identify any other information or documents responsive to this question.

- c. **all surveys and drawings of the Facility in your possession showing current configurations and improvements as well as previous configurations and improvements;**

All materials identified by Pfizer that are responsive to this question are included in Exhibit 1.

- d. **sanitary sewer system information, including drawings, sewer easements, surveys or maps showing location and configuration both as currently configured and previous configurations;**

Pfizer did not identify any information or documents responsive to this question.

- e. **storm water sewer system information, including drawings, surveys or maps showing location and configuration both as currently configured and previous configurations;**

Pfizer did not identify any information or documents responsive to this question.

- f. **all below-ground structures, including, pipes, pipelines, sumps, wells, dry-wells**

and other structures for storage or conveyance of solid, gaseous or liquid materials, whether above ground or below ground, and whether owned or operated by you or by another, and as presently configured and as previously configured;

Pfizer did not identify any information or documents responsive to this question.

- g. all above-ground structures, including buildings and including all facilities for storage or transport of solid, liquid or gaseous materials, whether owned or operated by you or by another, and as presently configured and as previously configured;**

Above-ground structures are identified in aerial photos, which are included in Exhibit 1. Pfizer believes that there were no above-ground structures at the Facility during the time that Pfizer owned the property.

- h. all over-water or in-water facilities (e.g., piers, docks, cranes, bulkheads, pipes, treatment facilities, containment booms, etc.);**

Pfizer did not identify any information or documents responsive to this question.

- i. all treatment or control devices for all media and pursuant to all environmental laws and regulations (e.g., surface water, air, groundwater, hazardous waste, solid waste, etc.);**

Pfizer did not identify any information or documents responsive to this question.

- j. groundwater wells, including drilling logs; and**

Pfizer did not identify any information or documents responsive to this question.

- k. information related to any other outfalls, ditches, direct discharge facilities or other conveyance features and any discharges associated therewith.**

Pfizer did not identify any information or documents responsive to this question.

- 12. For all items identified in subparagraphs d, e, f, g, h, i, j, or k, locate each such item on a Facility map or plan, provide the date of installation, identify all permits associated with each item, state whether such items are still in service or, if not, when they were removed from service, identify all leaks or spills, if any, associated with each, and identify any closure of any such item.**

See response to subparagraph (g), above. Pfizer did not identify any other information or documents responsive to this question.

- 13. For each permit identify the type of permit, the agency or governmental authority**

issuing the permit and provide a copy of the permit and any reports required to be generated by the permit.

Pfizer did not identify any information or documents responsive to this question.

14. With regard to the placement of Fill at the Facility:

- a. Was any fill placed on the Facility during the Company's ownership or operation or during the initial development of the Facility by the Company? If so, identify all areas of the Facility where fill was placed, the lateral extent of the fill and the depth of the fill, the purpose of the placement, the source of the fill, the amount of the fill in each area, and the identity of the contractors involved in work related to the fill. State whether the fill has ever been characterized, either before placement or thereafter and, if so, provide a copy of the sampling/characterization results.**

Aerial photos, included in Exhibit 1, appear to indicate that portions of the shoreline of the Facility were filled during the period that Pfizer owned and operated the Facility. Pfizer did not identify any other information or documents responsive to this question.

- b. Were any portions of the Facility historically part of Newtown Creek or did the Facility formerly include any marshlands or wetlands associated with Newtown Creek. Please depict any such areas on a survey, drawing or schematic. Please provide your understanding of who filled any such wet areas, the approximate date of such fill, and the lateral extent and depth of such fill, the source of the fill, the composition of the fill and, if any sampling has ever been done of such filled areas, provide a copy of the sampling results.**

See response to subparagraph (a), above.

15. Provide a copy of all reports, information or data you have related to soil, water (ground and surface), or air quality and geology/hydrogeology at and about the Facility. Provide copies of all documents containing such data and information, including both past and current aerial photographs as well as documents containing analysis or interpretation of such data.

Aerial photographs are included in Exhibit 1. Pfizer did not identify any other information or documents responsive to this question.

16. Identify all past and present solid waste management units or areas where materials are or were in the past managed, treated, or disposed (e.g., waste piles, landfills, surface impoundments, waste lagoons, waste ponds or pits, drainage ditches, tanks, drums, container storage areas, etc.) on the Facility. For each such unit or area, provide the following information:

- a. a map showing the unit/area's boundaries and the location of all known units/areas whether currently in operation or not. This map should be drawn to scale, if possible, and clearly indicate the location and size of all past and present**

units/areas;

All materials identified by Pfizer that are responsive to this question have been included in Exhibit 1.

b. dated aerial photograph of the site showing each unit/area;

All materials identified by Pfizer that are responsive to this question have been included in Exhibit 1.

c. the type of unit/area (e.g., storage area, landfill, waste pile, etc.), and the dimensions of the unit/area;

See response to Question 3(f). Pfizer believes that the mycelium was disposed of through land application.

d. the dates that the unit/area was in use;

See response to Question 3(e).

e. the purpose and past usage (e.g., storage, spill containment, etc.);

Pfizer believes that the purpose and past usage of the Facility was the for disposal of mycelium generated from the production of citric acid, and burning of packaging materials, from 1924 until 1963. See response to Question 3(f).

f. the quantity and types of materials (hazardous substances and any other chemicals) located in each unit/area;

Based on Pfizer's 1979 reply to the Eckhardt Survey (attached at Exhibit 3), Pfizer believes that 240,000 cubic yards of mycelium was disposed of at the Facility between 1924 and 1963.

g. the construction (materials, composition), volume, size, dates of cleaning, and condition of each unit/area; and

N/A

h. If the unit/area described above is no longer in use, explain how such unit/area was closed and what actions were taken to prevent or address potential or actual releases of waste constituents from the unit/area.

Pfizer did not identify any information or documents responsive to this question.

17. Provide the following information regarding any current or former sewer or storm sewer lines or combined sanitary/storm sewer lines, drains, or ditches discharging into Newtown Creek from the Facility:

- a. the location and nature of each sewer line, drain, or ditch;**

Pfizer did not identify any information or documents responsive to this question.

- b. the date of construction of each sewer line, drain, or ditch;**

Pfizer did not identify any information or documents responsive to this question.

- c. whether each sewer line, drain, or ditch drained any hazardous substance, waste, material or other process residue to Newtown Creek; and**

Pfizer did not identify any information or documents responsive to this question.

- d. provide any documentation regarding but not limited to the following on any and all outfalls to Newtown Creek which are located within the boundaries of the Facility. Your response should include, but not be limited to:**

- i. whether the Facility is serviced by or otherwise drains or discharges to the outfalls and, if so, the source of the outfall;**
 - ii. the identify of upland facilities serviced by the outfalls;**
 - iii. the upland geographic area serviced by the outfalls; and**
 - iv. the type of outfall (i.e., storm water or single or multiple facility outfall).**

Pfizer did not identify any information or documents responsive to this question.

- 18. Provide copies of any storm water or Facility drainage studies, including data from sampling, conducted at these Properties on stormwater, sheet flow, or surface water runoff. Also provide copies of any stormwater pollution prevention, maintenance plans, or spill plans developed for different operations during the Company's operation of the Facility.**

Pfizer did not identify any information or documents responsive to this question.

- 19. Connections to New York City sewer system:**

- a. State whether the Facility is connected to the New York City sewer and the date that the Facility was first connected;**
 - b. State whether the Facility has ever discharged liquid wastes other than through the New York City sewer system and, if so, provide details on such discharges;**
 - c. State whether the Facility participates in the New York City pretreatment program, whether the Company has ever been classified as a significant industrial user, whether the Company has ever been in violation of sewer use requirements or permits or received any notices of violation relating to use of the New York City sewer system;**
 - d. Provide any information detailing the volume of liquids discharged to the sewers and the nature of the discharges including analytical data detailing the makeup of the discharged liquids;**
 - e. Provide copies of all permits and permit applications for Industrial Wastewater**

- discharge permits;
- f. **Provide copies of all notices of violations, correspondence, hearing transcripts and dispositions relating to the Company's use of the New York City sewer system;**
- g. **Copy of Baseline Monitoring Reports submitted to NYC in connection with the Company's application for an industrial wastewater discharge permit;**
- h. **Copies of all surveys, reports or analyses delineating or characterizing the company's liquid wastes;**
- i. **Copies of all periodic monitoring reports for wastes discharged through the sewer system; and**
- j. **Copies of all invoices from NYC or the NYC Water Board for water and/or wastewater charges including any wastewater allowances.**

Pfizer did not identify any information or documents responsive to this question.

Section 4.0 Company's Operational Activities

20. **Describe the nature of your operations or business activities at the Facility. If the products or processes, operation or business activity changed over time, please identify each separate operation or activity, the dates when each operation or activity was started and, if applicable, ceased. Also, please provide the following:**
- a. **Identify and describe the business or other operations conducted at the Facility;**

See responses to Questions 3(f), 9 and 16.

- b. **Identify each industrial process employed at the Facility and the raw materials used and the wastes generated;**

See responses to Questions 3(f), 9 and 16. After 1963, Pfizer believes that the Facility was operated as a trucking terminal. Pfizer did not identify any information or documents responsive to what, if any, raw materials were used or wastes generated at the Facility after 1963.

- c. **Provide a schematic diagram or flow chart that fully describes and/or illustrates the Company's operations, from time to time, on the Facility;**

N/A

- d. **Provide a schematic diagram that indicates which part of the Company's operations generated each type of waste, including but not limited to wastes generated by cleaning and maintenance of equipment and machinery and wastes resulting from spills of liquid materials;**

Pfizer believes that the Company's operations at the Facility did not generate waste. Rather, the Facility was used to dispose of mycelium, a non-toxic fungus generated from the production of citric acid, and to burn packaging materials.

- e. Describe all settling tank, septic system, or pretreatment system sludges or other treatment wastes resulting from the Company's operations;**

See response to subparagraph (d), above.

- f. Provide copies of any Material Safety Data Sheets (MSDSs) and Right-to-Know Notices for raw materials used in the Company's operations at the Facility;**

Pfizer believes that no raw materials were used in the Company's operations at the Facility.

- g. Provide copies of MSDSs for each product produced at the Facility; and**

Pfizer believes that no products were produced by the Company at the Facility.

- h. Provide product literature and advertising materials for each product produced at the Facility.**

See response to subparagraph (g), above.

- 21. Did the Company store or combust coal at the Facility during the time of its ownership or operation? If your answer is yes, please respond to the following requests for information for all periods of time that the company operated at or owned the Facility:**

Pfizer believes that the Company did not store or combust coal at the Facility.

- a. Identify the purposes for such coal storage or combustion, including if used in energy production, the processes in which the energy was used at the Facility;**
- b. State the means by which the shipments of coal were delivered to the Facility, whether by barge, rail, truck or other, and identify the shipper and the vendor. Describe how the coal was received at the Facility and transported to storage facilities;**
- c. Identify the volume of coal received at the Facility, the type or types of coal (Le. bituminous, anthracite, etc.) received and consumed on an annual basis during the period of the Company's ownership or operations, including changes over time;**
- d. Describe the means of storage of coal at the Facility, including whether the Facility employed coal pockets or other storage areas, the dimensions and volume of such storage facilities, and whether such storage was indoors or outdoors and covered or uncovered. Identify on a Facility map or diagram the location of the coal storage facilities. Describe the means of transport of the coal from the storage facilities to the combustion point;**
- e. Identify how the coal ash was managed including the location and storage facilities for the coal ash and whether it was stored indoors or outdoors, covered or uncovered, the means of conveying the ash to the on-site storage facilities, the location of the storage facilities, and, if sent for disposal, identify the disposal**

- companies. State whether the ash was ever used at the Facility, whether as fill or for any other purpose, or if it was in any other manner disposed of at the Facility and, if so, describe the circumstances and identify the areas of disposal on a Facility map;
- f. State whether there were Company written manuals providing for coal purchase, storage, maintenance of storage facilities, transport, consumption, or ash management and, if so, provide a copy of such written materials; and
 - g. State whether there were any permits associated with the coal receipt, storage or consumption or ash management and, if so, provide a copy of such permits.
22. Describe the receipt, storage and off-shipment of chemicals, raw materials, intermediary product, and final product (including, without limitation petroleum) at the Facility. For each question, identify the time period covered by your response. Please provide a copy of Company manuals that over time were in effect describing these procedures.

Pfizer believes that there was no receipt, storage and off-shipment of chemicals, raw materials, intermediary product and final product at the Facility during Pfizer's ownership of the Facility. Pfizer did not identify any information or documents responsive to this question for the period after 1963.

- a. For receipt of materials, please identify:
 - i. all such materials (including, without limitation, petroleum) received, stored at or shipped from the Facility;
 - ii. its method of shipment to the facility (e.g., pipeline, barge, rail, tanker, truck, or other);
 - iii. testing, if any, upon receipt of such material, for quality, for conformity to specification, for contamination or otherwise; and
 - iv. treatment, if any, at the Facility of any material shipped to the facility, prior to storage in tanks at the facility.
- b. For petroleum storage, identify storage procedures including sampling or testing of petroleum products following initial storage; procedures for filtering or rerefining or cleaning petroleum products at the Facility in order to remove contamination or impurities or to meet specifications for petroleum products.
- c. For tank and infrastructure cleaning: Describe tank cleaning and infrastructure cleaning procedures, the identification of materials removed in such cleaning operations, the volume of waste generated in such operations and the storage, and the treatment and disposal of such wastes. Identify the contract and the contractors used to perform the cleaning for the Company.
- d. For metals and metal compounds (including but not limited to raw materials, scrap, byproducts, ash, wastewater and wastes containing metals or metal compounds but not including metals as components of structures or equipment): Identify any metals and metal compounds previously or currently used or otherwise present at the Facility; the purpose for each of them; any testing done on such materials; and the method and location of use, storage and other handling of such materials at the Facility. Identify all spills, emissions,

discharges and releases of any such substances at or from the Facility since the time that your Company owned or operated the Facility. Please provide any MSDSs for each such substance.

- e. For polychlorinated biphenyls ("PCBs"): Identify any PCBs previously or currently used or otherwise present at the Facility, including, but not limited to (i) PCBs in plasticizers, fire retardants, paints, water-proofing, railroad ties, heat stabilizing additives for adhesives, and other materials; (ii) PCBs in capacitors, transformers, vacuum pumps, hydraulic systems, and other devices; and (iii) PCBs in raw materials, wastes, wastewater, scrap, and byproducts. Identify the purpose for each of them; any PCB testing done on such materials; and the method and location of use, storage and other handling of PCBs at the Facility. Identify all spills, emissions, discharges and releases of any PCBs at or from the Facility since the time that your Company has owned the Facility. Please provide any MSDSs for PCBs at the Facility.
- f. Provide copies of any records, including Company manuals or written procedures that you have in your possession, custody or control relative to the activities described in this Question.

23. Describe the years of use, purpose, quantity, and duration of any application of pesticides or herbicides on the Facility. Provide the brand name of all pesticides or herbicides used.

Pfizer did not identify any information or documents responsive to this question.

24. For all periods of the Company's ownership or operation of the Facility, describe how wastes transported off the Facility for disposal or treatment were handled, stored, and/or treated prior to transport to the disposal facility.

Pfizer believes that no wastes were transported off the Facility for disposal and treatment.

25. Describe all wastes disposed by the Company into drains at the Facility, including but not limited to:
- a. the nature and chemical composition of each type of waste;
 - b. the approximate quantity of those wastes disposed by month and year;
 - c. the location to which these wastes drained (e.g. septic system or storage tank at the Facility, oil-water separator, pre-treatment plant, New York City sewer system); and
 - d. whether and what pretreatment was provided.

Pfizer believes that mycelium was disposed of through land application. Pfizer did not identify any information or documents indicating that mycelium was disposed into drains at the Facility.

26. Identify all oil/water separators at the Facility during the Company's ownership or operation including dates of installation, dates of replacement or major modification, purpose of installation and source of influent, location of discharge. Provide a copy of each permit and permit application, influent and effluent

sampling results and copies of all submissions to federal, state, city or county environmental agencies or public health agencies relating to oil/water separators.

Pfizer believes that no oil/water separators existed at the Facility during the Company's ownership and operation.

- 27. Identify each fixed above-ground storage tank and each fixed below-ground storage tank that is or was situated on the Facility during the Company's ownership or operation. For each tank, identify the date of installation, the dates and nature of major modifications, the dates and nature of spill detection equipment, the dates and nature of cathodic protection equipment, and description or drawings of tanks, identity of contents that have been stored in the tank both before (if known) or during the Company's ownership or operation, and the practices of cleaning at the time of any change in items stored, and the manner of ultimate disposal of wastes from the tank. Identify procedures for addressing spills from the tanks and identify all spills that have occurred during the Company's ownership of the Facility. Provide a copy of all permits relating to the tank and provide a copy of all Company written manuals or procedures, including manuals that have been superseded by newer manuals or procedures, addressing use and maintenance of such tanks.**

Pfizer believes that no above-ground or below-ground storage tanks were situated on the Facility during the Company's ownership and operation.

- 28. Identify each pipeline serving the Facility that is or was situated on the Facility property (either above-or below-ground) during the Company's ownership or operation. For each pipeline, identify the owner and the operator for the pipeline and the owner or operator of the pipeline to which such segment is connected, and provide a copy of all permits relating to the pipeline on the Facility, the date of installation, all materials transported to the Facility through the pipeline, including crude petroleum or petroleum products, additives, other refining materials, batch separators, natural gas, manufactured gas, other fuel sources, chemicals and/or other materials. Describe pipeline cleaning processes and procedures for handling and disposal of wastes in the pipelines including mixed batches of materials in the pipeline. Identify procedures for addressing spills from the pipelines and identify all spills that have occurred during the Company's ownership of the Facility. Please provide a copy of all Company written manuals or procedures, including manuals that have been superseded by newer manuals or procedures, which address or regulated use and maintenance of such pipelines.**

Pfizer believes that no above-ground or below-ground pipelines served or were situated on the Facility during the Company's ownership and operation.

Section 4.1 Waste Disposal at the Facility From "Pfizer's Brooklyn Plant."

- 29. With respect to Pfizer's Brooklyn Plant (see Definition number 11) for the period 1924 to 1964:**

a. Identify all products and intermediary products manufactured or produced at Pfizer's Brooklyn Plant;

Pfizer's Brooklyn Plant manufactured numerous products over the more than 150 years that it was in operation, including without limitation: pharmaceuticals and active pharmaceutical ingredients; mercurials; antiparasitics; tartaric acid and cream of tartar; citric acid; vitamins; iodine; inorganic and organic salts, and camphor.

b. Identify all SIC codes (Standard Industrial Classification System) applicable to Pfizer's Brooklyn Plant;

Based on the Company's current understanding of the historical operations of Pfizer's Brooklyn Plant, Pfizer believes that the SIC codes applicable to the plant were: 2833; 2834; and 2869 (as per classifications contained in the 1987 Standard Industrial Classification Manual). This list may not be exhaustive.

c. Identify each manufacturing or industrial processes conducted at Pfizer's Brooklyn Plant in connection with products and intermediary products produced;

Pfizer objects to this question as unduly burdensome and unreasonable. It is not possible to identify each manufacturing or industrial process conducted at the Brooklyn Plant over the more than 150 years that the plant operated. To the extent that this question relates to manufacturing or industrial processes related to the Company's operations at the Facility, Pfizer believes that the mycelium sent to the Facility was generated during the production of citric acid, as explained elsewhere in this response. The process involves feeding the mold *Aspergillus niger* with sugar/molasses, which produces citric acid as a result of fermentation.

d. Identify all raw materials used in manufacturing processes and provide MSDSs or other analysis showing the constituent chemicals in such materials;

Pfizer objects to this question as unduly burdensome and unreasonable. It is not possible to identify each manufacturing or industrial process conducted at the Brooklyn Plant over the more than 150 years that the plant operated. To the extent that this question relates to manufacturing or industrial processes related to the Company's operations at the Facility, Pfizer believes that the mycelium sent to the Facility was generated during the production of citric acid, as explained elsewhere in this response. Raw materials involved in the production of citric acid include water, sugar/molasses (molasses eventually replaced sugar in the process), phosphoric acid, sodium ferrocyanide, hydrogen peroxide, magnesium dioxide, zinc nitrate, ammonium oxide, and *Aspergillus niger*. An MSDS for mycelium is enclosed herein as Exhibit 5.

e. Identify each waste stream generated at Pfizer's Brooklyn Plant (whether for manufacturing, cleaning of machinery or other activity, and identify all hazardous substances contained in each such waste stream;

Pfizer objects to this question as unduly burdensome and unreasonable. It is not possible to

identify each waste stream from the Brooklyn Plant over the more than 150 years that the plant operated. To the extent that this question relates to the Company's operations at the Facility, Pfizer believes that the citric acid production process involved three distinct waste streams. The first stream consisted of inorganic salts and metals resulting from the preparation of molasses for fermentation. This waste stream was in the form of a slurry or mud, and consisted of phosphoric acid, sodium ferrocyanide, hydrogen peroxide, zinc nitrate, ammonium oxide, and certain metals. The second waste stream occurred after the fermentation of molasses, and consisted entirely of mycelium, created as a result of fermentation, separated from the post-fermentation solution through screening and a centrifuge. The mycelium may have contained trace amounts of sodium ferrocyanide. Mycelium is the vegetative portion of a fungus, and is stringy and sponge-like in nature. The third waste stream occurred as a result of reconditioning post-fermentation solution to create pure citric acid and consisted of calcium oxalate, ferric ferrocyanide, barium hydroxide, carbon, and calcium sulfate. The third waste stream was also in the form of a slurry or mud.

- f. Identify the nature of the wastes from Pfizer's Brooklyn Plant, whether liquid, solid or gaseous and the activity associated with the generation of such waste stream;**

See response to subparagraph (e).

- g. Identify the total amount of wastes produced in each year at Pfizer's Brooklyn Plant and identify all waste disposal sites where such wastes were disposed;**

Pfizer objects to this question as unduly burdensome and unreasonable. It is not possible to identify each waste stream, and the total amounts of each, from the Brooklyn Plant over the more than 150 years that the plant operated.

- h. Identify the total amount of wastes disposed of at the Facility for each year between 1924 and 1964;**

Pfizer did not identify any information or documents indicating the total amount of wastes disposed of at the Facility annually from 1924 through 1964. Pfizer believes that the total amount of waste disposed of at the Facility was 240,000 cubic yards, as indicated in the response to Question 16(f).

- i. Identify the method of waste collection and disposal from Pfizer's Brooklyn Plant between the years 1924 and 1964 and all waste disposal sites used by the Company;**

Pfizer objects to this question as unduly burdensome and unreasonable. It is not possible to identify each method of waste collection and disposal from the Brooklyn Plant over the more than 150 years that the plant operated. To the extent that this question relates to the Company's operations at the Facility, Pfizer believes that the mycelium was collected and transported via truck to the Facility. Pfizer believes that the other waste streams resulting from the production of citric acid, i.e., the first and third waste streams described in subparagraph (e) above, were disposed of via the New York City municipal sewer system.

- j. Identify where at the Facility wastes were disposed and state whether wastes of any kind were disposed of into Newtown Creek whether directly by dumping or through pipes or conveyances of any kind;**

See responses to Questions 9 and 25.

- k. Describe all methods employed by the Company to contain the wastes disposed of at the Facility;**

Pfizer believes that mycelium was disposed of through land application. Pfizer did not identify any other information or documents responsive to this question.

- l. Describe all buildings and improvements located at the Facility between 1924 and 1964, including specifically all improvements relating to waste treatment, storage or disposal;**

Aerial photographs (Exhibit 1) appear to indicate that the Facility was unimproved between 1924 and 1964. Pfizer did not identify any other information or documents responsive to this question.

- m. Identify all investigations of environmental conditions at the Facility whether before, during or after the period of 1924 to 1964 and provide all documentation relating to such investigations; and**

Pfizer did not identify any information or documents responsive to this question.

- n. Identify all investigations by federal, state or local regulatory authorities relating to waste management practices, waste disposal or environmental conditions relating to the Company's ownership or operation of the Facility, and provide copies of all communications and records relating thereto.**

Pfizer did not identify any information or documents responsive to this question.

- 30. With respect to Pfizer's Brooklyn Plant (See Definition number 11) for the period 1924 to 1964, describe the cleaning and maintenance of the equipment and machinery involved in these operations, including but not limited to:**
- a. the types of materials used to clean/maintain this equipment/machinery;**
 - b. the monthly or annual quantity of each such material used;**
 - c. the types of materials spilled in the Company's operations;**
 - d. the materials used to clean up those spills;**
 - e. the methods used to clean up those spills;**
 - f. where the materials used to clean up those spills were disposed of;**
 - g. provide copies of Company manuals or procedures relating to cleaning of equipment and machinery and the Facility; and**
 - h. provide copies of all records of such cleaning and maintenance including**

internal records and records from any outside vendor for such services.

Pfizer objects to this question as unduly burdensome and unreasonable. It is not possible to identify each manufacturing or industrial process, and the equipment and machinery involved in each of those processes, conducted at the Brooklyn Plant over the more than 150 years that the plant operated. To the extent that this question relates to manufacturing or industrial processes related to the Company's operations at the Facility, Pfizer did not identify any information or documents related to the cleaning and maintenance of equipment and machinery involved in the citric acid production process.

Section 5.0 Regulatory Information

- 31. Identify each federal, state and local authority that regulates or regulated environmental concerns relating to the ownership or operation at the Facility, the activity regulated, and the applicable federal, state and local statute or regulation from which such regulation was derived.**

Pfizer did not identify any information or documents responsive to this question.

- 32. Describe all occurrences associated with violations, citations, deficiencies, and/or accidents concerning the Facility related to environmental concerns. Provide copies of all documents associated with each occurrence described.**

Pfizer did not identify any information or documents responsive to this question.

- 33. Provide a list of all local, state, and federal environmental permits which have been applied for or issued to the Company with respect to the Facility for any media, e.g., water (including SPDES and NPDES, NYC sewer permit, Industrial Pretreatment Program permit or any other wastewater discharge related governmental authorization or notice), excavation and fill in navigable waters, dredging, tidal wetlands, air, solid waste or hazardous waste, bulk storage, industrial wastewater, etc. under any environmental statute or regulation. Provide a copy of each federal and state permit, the applications for each permit.**

Pfizer did not identify any information or documents responsive to this question.

- 34. Has the Company or any affiliate, contractor, or agent associated with the Company or an affiliate, or any individual associated with any of the foregoing ever been accused of any criminal violation in connection with any operation at the Facility. If so, describe the disposition of such accusation and provide details on such accusation.**

Pfizer did not identify any information or documents responsive to this question.

- 35. Was a Notification of Hazardous Waste Activity ever filed with EPA or New York State for any activity at the Facility during the period that the Company or any**

affiliate owned or operated at the Facility. If so, provide a copy of such notification and the response given by EPA or New York State including the RCM identification number assigned.

Pfizer did not identify any information or documents responsive to this question.

- 36. Did the Company or any affiliate ever have "interim status" under RCRA at the Facility? If so, and the Facility does not currently have interim status; describe the circumstances under which the Facility lost interim status.**

Pfizer did not identify any information or documents responsive to this question.

- 37. Identify all state or city offices to which the Company has sent or filed hazardous substance or hazardous waste information. State the years during which such information was sent/filed.**

Pfizer objects to this question as unduly burdensome and unreasonable. Pfizer has, or has had, operations in numerous states throughout the country. Identifying each such filing of hazardous substance or hazardous waste information would be impracticable, and the results of such an exercise irrelevant. To the extent that the question relates to the Facility, Pfizer did not identify any information or documents responsive to this question.

- 38. Has the Company or the Company's contractors, lessees, tenants, or agents ever contacted, provided notice to, or made a report to the New York State Department of Environmental Conservation or New York City Department of Environmental Protection or any other state or city agency concerning an incident, accident, spill, release, or other event involving the Facility or involving Newtown Creek? If so, describe each incident, accident, spill, release, or other event and provide copies of all communications between the Company or its agents and NYSDEC, NYCDEP, NYSDOH, NYCDOH or any other state or city agency.**

Pfizer did not identify any information or documents responsive to this question.

Section 6.0 Facility Releases, Investigations and Remediation

- 39. Identify all leaks, spills, or releases into the environment of any waste, including hazardous substances, pollutants or contaminants, industrial waste or petroleum, that have occurred at or from the Facility. In addition, identify and provide copies of any documents regarding:**
- a. the date of each releases;**
 - b. how the releases occurred, e.g. when the substances were being stored, delivered by a vendor, transported or transferred (to or from any tanks, drums, barrels, or recovery units), and treated;**
 - c. the identity of the material released and the amount of each released;**
 - d. where such releases occurred;**
 - e. activities undertaken in response to each such release or threatened release,**

including the notification of any agencies or governmental units about the release and the remediation and the regulatory disposition concerning such release; and

- f. identify all fires, explosions or other similar events that have occurred at the Facility during the Company's ownership or operation that required response either by a Facility employee or a New York City responder or that was the subject of a subsequent investigation by a New York City agency. Identify the location on a Facility map where each of the events occurred and identify the items that were combusted in whole or part, including, without limitation, hazardous substances, pollutants or contaminants, industrial waste or petroleum. Provide a copy of all reports of the event, whether such reports are the Company's private reports or are public reports in the Company's possession.

See response to Question 3(f).

40. Was there ever a spill, leak, release or discharge of waste, or process residue, including hazardous substances, pollutants, contaminants, industrial waste, or petroleum into any subsurface disposal system or floor drain inside or under a building on the Facility? If the answer to the preceding question is anything but an unqualified "no", provide details of each event and any communication with any federal, state or city regulatory body.

Pfizer did not identify any information or documents indicating that any such leak, spill, or release occurred at the Facility during the period that Pfizer owned and operated the Facility.

41. Has any contaminated soil ever been excavated or removed from the Facility? Unless the answer to the preceding question is anything besides an unequivocal "no", identify and provide copies of any documents regarding:
- a. Reason for soil excavation;
 - b. location of excavation presented on a map or aerial photograph;
 - c. manner and place of disposal and/or storage of excavated soil;
 - d. dates of soil excavation and amount of soil excavated;
 - e. all analyses or tests and results of analyses of the soil that was removed from the Facility;
 - f. all confirmatory analyses or tests and results of analyses of the excavated area after the soil was excavated and removed from the area; and
 - g. all persons, including contractors, with information about (a) through (f) of this question.

Pfizer did not identify any information or documents indicating that any contaminated soil has ever been excavated or removed from the Facility.

42. Have you treated, pumped, or taken any kind of response action on groundwater under the Facility? Unless the answer to the preceding question is anything besides an unequivocal "no", identify and provide copies of any documents regarding:

- a. reason for groundwater action;
- b. whether the groundwater contains or contained hazardous substances, pollutants, contaminants, industrial waste, or petroleum, what the constituents are or were which the groundwater contained, and why the groundwater contained such constituents;
- c. all analyses or tests and results of analyses of the groundwater;
- d. if the groundwater action has been completed, describe the basis for ending the groundwater action; and
- e. all persons, including contractors, with information about (a) through (d) of this question.

Pfizer did not identify any information or documents indicating that any kind of response action on groundwater has ever been taken at the Facility.

43. **Was there ever a spill, leak, release or discharge of a hazardous substance, waste, or material into Newtown Creek from any equipment, structure, or activity occurring on, over, or adjacent to the Creek? If the answer to the preceding question is anything but an unequivocal "no", identify and provide copies of any documents regarding:**
- a. the nature of the hazardous substance, waste, or material spilled, leaked, released or discharged;
 - b. the dates of each such occurrence;
 - c. the amount and location of such release;
 - d. whether sheens were created on the Creek by the release; and
 - e. whether there ever was a need to remove or dredge any solid waste, bulk product, or other material from the Creek as a result of the release? If so, please provide information and description of when such removal/dredging occurred, why, and where the removed/dredged materials were disposed.

Pfizer did not identify any information or documents indicating that any such leak, spill, release or discharge occurred at the Facility during the period that Pfizer owned and operated the Facility.

44. **Describe the purpose for, the date of initiation and completion, and the results of any investigations of soil, water (ground or surface), sediment, geology, hydrology, or air quality on or about the Facility. Provide copies of all data, reports, and other documents that were generated by the Company or any contractor or consultant, or by a federal or state regulatory agency related to the investigations that are described.**

Pfizer did not identify any information or documents responsive to this question.

45. **Describe any remediation or response actions that you or your agents or consultants have ever taken or are currently taking at the Facility, either voluntarily or as required by any state, local or federal entity. If not otherwise already provided under this Information Request, provide copies of all enforcement agreements with**

regulatory agencies pursuant to which such response actions were undertaken as well as all reports of investigations or cleanup activities on the Facility.

Pfizer did not identify any information or documents responsive to this question.

- 46. State whether you are planning to perform any investigations of the soil, water (ground or surface), geology, hydrology, and/or air quality on or about the Facility? If so, identify: the purpose, nature, and scope of such investigations and the dates when you plan to undertake such investigations.**

No.

- 47. Provide a copy of all environmental investigation reports of the Facility including investigations undertaken at the times of acquisition and transfers of the Facility by the Company.**

Pfizer did not identify any information or documents responsive to this question.

Section 7.0 Compliance with this Request and Financial Information

- 48. Persons and Sources Consulted in Your Response: Identify all persons, other than counsel, that the Company consulted, and all sources that the Company reviewed in responding to this request, including, but not limited to:**
- a. the names of persons consulted, the contact information for such person, and if the person is a current or former employee, the job title and responsibilities for such persons and the dates of employment, and identify which questions the person was consulted about; and**

Pfizer consulted:

Mr. Allan Larsen
Vice President, Alliance Partner Quality Assurance
Pfizer Inc.
235 East 42nd Street
New York, NY 10017-5755
Allan.Larsen@Pfizer.com

Mr. Larsen has been employed at Pfizer since June 8, 1964, during which time he has held a number of positions, including positions within the Company's former Citric Acid Operations. Pfizer believes that Mr. Larsen is the most knowledgeable authority with respect to the citric acid production process at Pfizer's Brooklyn Plant. Mr. Larsen was consulted about the citric acid production process, including raw ingredients, waste streams, waste disposal, and the characteristics of mycelium. Information gleaned from Mr. Larsen has been incorporated into responses throughout this document, including Questions 3, 5, 9, 20, 29, and 39.

- b. a description and the location of where all sources reviewed are currently**

located, and the questions to which such sources relate.

Pfizer retained Roux Associates, Inc. to gather publicly available regarding the Facility including Sanborn Maps, aerial photographs and environmental database search results. The information provided by Roux has been compiled and is enclosed herein as Exhibit 1. The questions to which this information relates are 3, 9, 11, 14, 15, 16, and 29.

Pfizer retained First American Title to perform a title search on the Facility property. The results of that search are enclosed as Exhibit 2. This information relates to Question 3.

Pfizer reviewed the Company's response to the Eckhardt investigation. The pertinent pages of that document are enclosed as Exhibit 3. The questions to which this source relates are 3, 5, 9, 16, 20, 29, and 39.

Pfizer reviewed the Environmental Assessment of Mycelium Disposal Sites, Southeastern Connecticut, prepared by Recra Environmental Inc., 1987. This report is enclosed herein as Exhibit 4. The questions to which this source relates are 3, 5, 9, 16, 29, and 39.

Pfizer reviewed the MSDS for mycelium, which is attached as Exhibit 5. This information relates to Question 29.

Pfizer reviewed a book entitled The Legend of Pfizer, by Jeffrey L. Rodengen (Write Stuff Syndicate, 1999). A copy of this book is located in the office of Merrill Fliederbaum. This book was used to obtain general background information relating the Pfizer's Brooklyn operations.

Pfizer reviewed the Final Environmental Impact Statement for the Kosciuszko Bridge Project, Appendix P. Appendix P contains a Hazardous Waste Screening Report for properties within the project corridor, including the Facility. A portion of this report can be found in Exhibit 1. Appendix P in its entirety can be found on the web at:
<https://www.dot.ny.gov/content/delivery/region11/projects/X72977-Home/X72977-Repository/appendix%20p1.pdf>

49. Identify all individuals who currently have and those who have had responsibility for the Company's environmental matters (e.g. responsibility for the disposal, treatment, storage, recycling, or sale of the Company's wastes). Also provide each such individual's job title, duties, dates performing those duties, supervisors for those duties, current position or the date of the individual's resignation, and the nature of the information possessed by such individuals concerning the Company's waste management.

Pfizer objects to this question as unduly burdensome and unreasonable. Pfizer is a global company with current and historical operations all over the world and it is not possible to identify each individual who has or has had responsibility for environmental matters at each of these operations. Furthermore, such information would not be relevant to the Newtown Creek Site. However, ultimate responsibility for the Company's environmental matters currently resides with Steve Brooks, Vice President, Global Environment, Health & Safety Operations.

Mr. Brooks has held the position since 2007. Prior to Mr. Brooks, the position (or its equivalent) was held by Carol Casazza Herman (2006-2007); James Lime (2001-2005); and J. Michael Richardson (1993-2001). An overarching position consolidating responsibility for the Company's environmental matters did not exist prior to 1993. Pfizer is unable to identify the individual or individuals who had responsibility for environmental matters at the Pfizer Brooklyn Plant between the years 1924 and 1963, and is uncertain if such a position existed during all or certain portions of that time period.

50. Financial Information: Provide a copy of the Company's certified annual financial statements for each of the most recent three years.

Pfizer is a publicly traded company. The requested information is contained in Pfizer's annual Form 10-K, which is publicly available on the SEC website.

51. Insurance and Indemnification:

- a. Provide a schedule of liability insurance policies that provided coverage for the Company with respect to the Facility. Please list all policies from the Company's initial ownership or initial operation of the Facility to the current date, showing the insured, insurer, broker or agent from whom you procured such insurance (if any), policy number, effective dates of the policy, and liability limits. Provide a copy of the Declaration Page for each such insurance policy. For any insurance policy that the Company no longer has in its possession, provide a copy of relevant records tending to show the existence of such policy;**

Pfizer did not identify any information or documents responsive to this question.

- b. Provide a schedule of casualty insurance policies since the time of initial ownership or operation of the Facility, with the same information called for in the previous subparagraph that may provide coverage for cleanup of the Facility;**

Pfizer did not identify any information or documents responsive to this question.

- c. Has the Company made claims under any policy in connection with environmental liability or environmental casualty in connection with the Facility? If the Company has ever made such a claim, provide a copy of all notices and correspondence in connection with such claim, and state the disposition of such claim;**

Pfizer did not identify any information or documents responsive to this question.

- d. Identify each entity that may have a duty to indemnify the Company for any potential liability in connection with the Facility or the Site, identify the circumstances giving rise to the indemnity, and provide a copy of any document that reflects a requirement to indemnify the Company; and**

Pfizer did not identify any information or documents responsive to this question.

- e. Identify each entity that the Company has agreed to indemnify for any potential liability in connection with the Facility or the Site, identify the circumstances giving rise to the indemnity and provide a copy of any document that reflects a requirement to indemnify by the Company.**

Pfizer did not identify any information or documents responsive to this question.

**RESPONSE OF PFIZER INC.
TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S
REQUEST FOR INFORMATION, DATED OCTOBER 25, 2011 – NEWTOWN CREEK
SUPERFUND SITE, KINGS COUNTY AND QUEENS COUNTY, NEW YORK**

EXHIBIT 1

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

A1 LOMBARDY STREET LANDFILL
Target 295 LOMBARDY STREET
Property BROOKLYN, NY 11222

HSWDS S108147104
N/A

Site 1 of 5 in cluster A

Actual:
14 ft.

HSWDS:

Facility ID:	Not reported
Region:	2
Facility Status:	None
Owner Type:	Puplic
Owner:	Jones Motor Trucking Co.
Owner Address:	925 Lombardy St.
Owner Phone:	(212)782-5300
Operator Type:	Puplic
Operator:	Pfizer Co.
Operator:	Pfizer Co.
Operator Phone:	Unknown
EPA ID:	NYD980532360
Registry:	Not on NYS Registry of Inactive Haz Waste Disposal Sites
Registry Site ID:	None
RCRA Permitted:	Unknown
Site Code:	Industrial Landfill
Owner City State:	Brooklyn, NY 11222
Operator City State:	Not reported
Quadrangle:	Unknown
Latitude:	40 43'20"N
Longitude:	73 56'00"W
Acres:	2.00
Operator Date:	1924
Close Date:	1964
Completed:	PA
Active:	Unknown
PCB's Disposed:	Unknown
Pesticides Disposed:	Unknown
Metals Disposed:	Unknown
Asbestos Disposed:	Unknown
Volatile Organic Compounds Disposed:	Unknown
Semi Volatile Organic Compounds Disposed:	Unknown
Analytical Info Exists for Air:	Not reported
Analytical Info Exists for Ground:	None
Analytical Info Exists for Surface:	Not reported
Analytical Info Exists for Sediments:	Not reported
Analytical Info Exists for Surface:	Not reported
Analytical Info Exists for Substance:	Not reported
Analytical Info Exists for Waste:	Not reported
Analytical Info Exists for Leachate:	Not reported
Analytical Info Exists for EP Toxicity:	Not reported
Analytical Info Exists for TCLP:	Not reported
Threat to Environment/Public Health:	Environmental/Public
Surface Water Contamination:	Unknown
Surface Water Body Class:	Unknown
Groundwater Contamination:	Unknown
Groundwater Classification:	Unknown
Drinking Water Contamination:	No
Drinking Water Supply is Active:	Unknown
Any Known Fish or Wildlife:	No
Hazardous Exposure:	Unknown
Site Has Controlled Access:	Unknown

Map ID
Direction
Distance
Elevation

MAP FINDINGS

Site

Database(s)

EDR ID Number
EPA ID Number

LOMBARDY STREET LANDFILL (Continued)

S108147104

Ambient Air Contamination:	Unknown
Direct Contact:	Unknown
EPA Hazardous Ranking System Score:	Unknown
Inventory:	F
Nefrap:	Not reported
Mailing:	Not reported
Tax Map No:	Not reported
Qualify:	0
Next Action:	Not reported
Agencies:	Not reported
Air:	Not reported
Building:	Not reported
Site Desc:	Not reported
Drink:	Not reported
Eptox:	Not reported
Fish:	Not reported
Ground:	Not reported
Ground Desc:	Not reported
Hazardous Threat:	Not reported
Haz Threat Desc:	Not reported
Leachate:	Not reported
Preparer:	Not reported
Sediment:	Not reported
Soil:	Not reported
Surface:	Not reported
Status:	Not reported
Surface Soil:	Not reported
Surface:	Not reported
TCLP:	Not reported
Waste:	Not reported

A2 **MORGAN REALTY CORP**
Target **295 LOMBARDY ST**
Property **BROOKLYN, NY 11222**

RCRA-NonGen **1000554879**
FINDS **NYD986973683**
MANIFEST

Site 2 of 5 in cluster A

Actual:
14 ft.

RCRA-NonGen:
Date form received by agency: 01/01/2007
Facility name: MORGAN REALTY CORP
Facility address: 295 LOMBARDY ST
BROOKLYN, NY 11222
EPA ID: NYD986973683
Mailing address: S SERVICE RD
JERICHO, NY 11753
Contact: Not reported
Contact address: S SERVICE RD
JERICHO, NY 11753
Contact country: US
Contact telephone: Not reported
Contact email: Not reported
EPA Region: 02
Land type: Facility is not located on Indian land. Additional information is not known.
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

PFIZER COMPANY SELLS 6-ACRE PLOT

Brooklyn Tract to Be Used as Trucking Terminal

The Charles Pfizer Company, manufacturer of pharmaceuticals with plants and offices throughout the world, has sold six acres of vacant land at Gardner and Lombardy Streets in the Greenpoint section of Brooklyn.

The tract was bought by the Scott Realty Corporation, represented by Theodore Pollack. The sale was arranged by Gerald J. Ellman, president of the Brevoort Management Company, Brooklyn brokers.

Mr. Ellman said that he had also arranged that a trucking terminal be built on the property for a Boston company. The proposed building will contain 60,000 square feet of space.

Pfizer has a manufacturing plant on Gerry Street in Brooklyn, and its international headquarters are in the Charles Pfizer building, 42d Street and Second Avenue.

2-Story Building Sold

Two two-story apartment and store buildings at 1597-89 St. Johns Place, Brooklyn, have been sold by Yetta Grossman to the Majer Realty Company for investment. The buildings, which occupy a plot 40 by 100 feet, are vacant and will be modernized. Thomas J. Hayes, vice president of M. C. O'Brien, Inc., was the broker.

Investors Buy Apartments

The 12-story apartment building at 80 Cranberry Street, Brooklyn, has been sold by the Cranlyn Building Corporation to an investing client of the Cruikshank Company, brokers, who were represented by George H. Wilcox.

Factory Sold

The Walworth Realty Corporation has sold the four-story factory building at 178 Walworth Street, Brooklyn, to Fred Frenkel. The building, which contains 25,000 square feet of space, is in the Williamsburg section and had been owned by the seller for 30 years. It will be occupied in part by the new owner for processing feathers and down. The Kalmon Dolgin Company was the broker.

Lombardy Street

295 Lombardy Street
Brooklyn, NY 11222

Inquiry Number: 3204773.6
November 10, 2011

The EDR-City Directory Abstract

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Findings

Thank you for your business.

Please contact EDR at 1-800-352-0050
with any questions or comments.

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This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OR DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1928 through 2005. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 100 feet of the target property.

A summary of the information obtained is provided in the text of this report.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

<u>Year</u>	<u>Source</u>	<u>IP</u>	<u>Adjoining</u>	<u>Text Abstract</u>	<u>Source Image</u>
2005	Hill-Donnelly Corporation	X	-	X	-
2000	Cole Information Services	X	X	X	-
1997	NYNEX	X	-	X	-
1992	NYNEX Information Resource Co.	-	-	-	-
1985	NYNEX Information Resources Company	X	-	X	-
1980	New York Telephone	-	-	-	-
1976	New York Telephone	X	-	X	-
1973	New York Telephone	X	-	X	-
1970	New York Telephone	-	-	-	-
1965	New York Telephone	-	-	-	-
1960	New York Telephone	-	-	-	-
1949	New York Telephone Company	-	-	-	-
1945	New York Telephone	-	-	-	-
1940	New York Telephone	-	-	-	-
1934	R. L. Polk & Co.	-	-	-	-
1928	New York Telephone	-	-	-	-

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

295 Lombardy Street
Brooklyn, NY 11222

FINDINGS DETAIL

Target Property research detail.

<u>Year</u>	<u>Uses</u>	<u>Source</u>
2005	Estes Express Lines	Hill-Donnelly Corporation
	Overnite Transportation Co	Hill-Donnelly Corporation
	Truck Rite Corp	Hill-Donnelly Corporation
2000	OVRNT TRNSPRTN CO	Cole Information Services
	TRUCK RITE CORP	Cole Information Services
1997	Overnite Transportation Co Inc	NYNEX
	Truck Rite Corp	NYNEX
1985	RYDER PIE NATIONWIDE INC	NYNEX Information Resources Company
1976	JONES MOTOR CO INC FRGHT	New York Telephone
1973	Dispatch	New York Telephone
	Jones Motor Co Inc frght	New York Telephone

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

LOMBARDY ST

347 LOMBARDY ST

<u>Year</u>	<u>Uses</u>	<u>Source</u>
2000	JONATHAN CURLEY	Cole Information Services
	VICS SHOP	Cole Information Services
	JASON L DODGE	Cole Information Services
	RICHARD DUENAS	Cole Information Services
	JOHN JURAYJ	Cole Information Services
	JOHN MAHONEY	Cole Information Services
	J MC GOWAN	Cole Information Services
	JEFF MCGOWAN	Cole Information Services
	KHARA NEMITZ	Cole Information Services
	J PANTOLEON	Cole Information Services
	DAVID RENGEL	Cole Information Services
	CHELSEA ROMERSA	Cole Information Services
	KIM SOBEL	Cole Information Services
	MMTL LAMP SHD CO	Cole Information Services

369 LOMBARDY ST

<u>Year</u>	<u>Uses</u>	<u>Source</u>
2000	ULTMT BOWL PRDCTS	Cole Information Services

FINDINGS

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched

295 Lombardy Street

Address Not Identified in Research Source

1992, 1980, 1970, 1965, 1960, 1949, 1945, 1940, 1934, 1928

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched

347 LOMBARDY ST

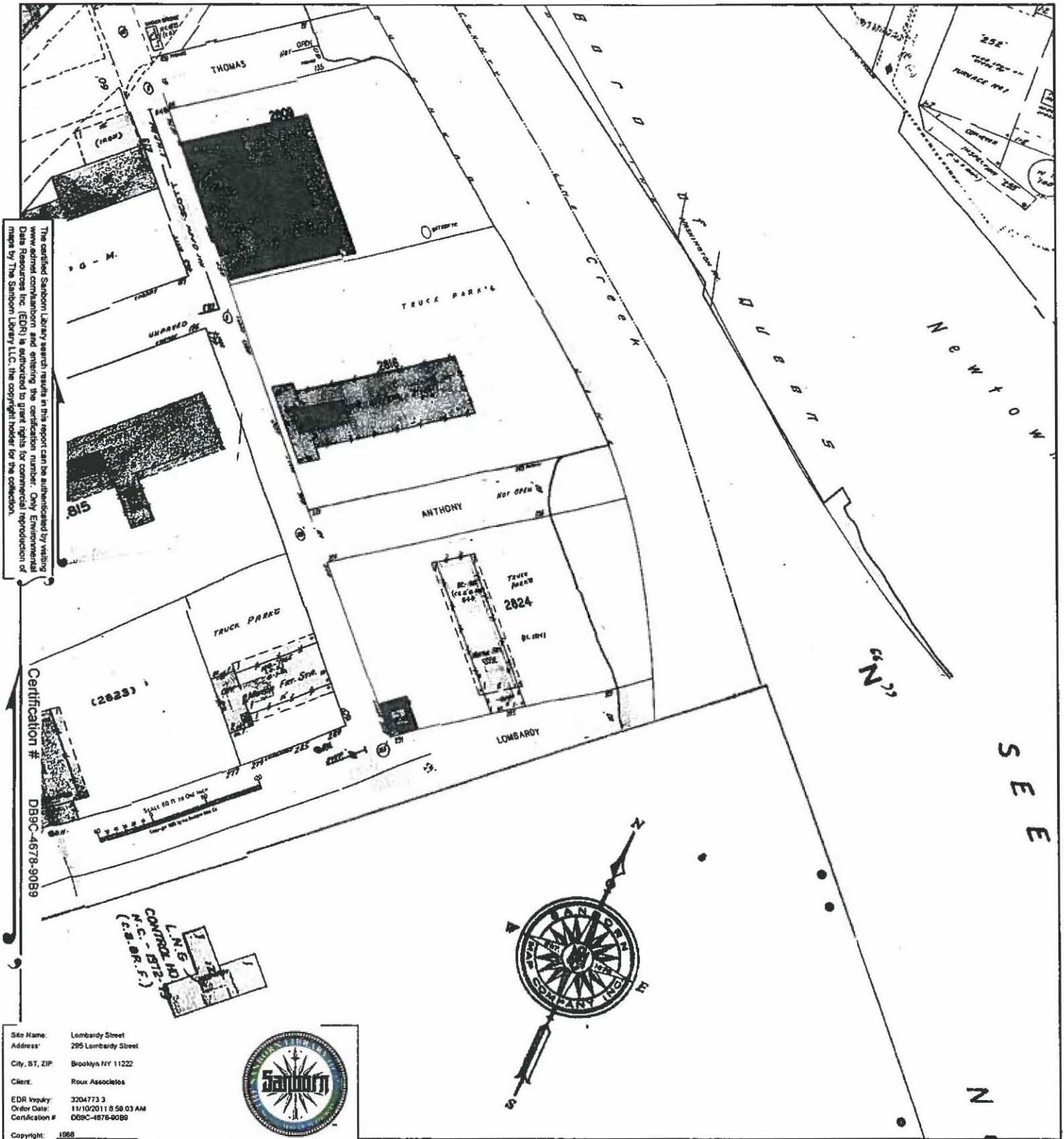
Address Not Identified in Research Source

2005, 1997, 1992, 1985, 1980, 1976, 1973, 1970, 1965, 1960, 1949, 1945, 1940, 1934, 1928

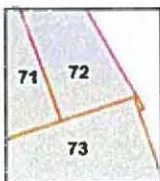
369 LOMBARDY ST

2005, 1997, 1992, 1985, 1980, 1976, 1973, 1970, 1965, 1960, 1949, 1945, 1940, 1934, 1928

1988 Certified Sanborn Map



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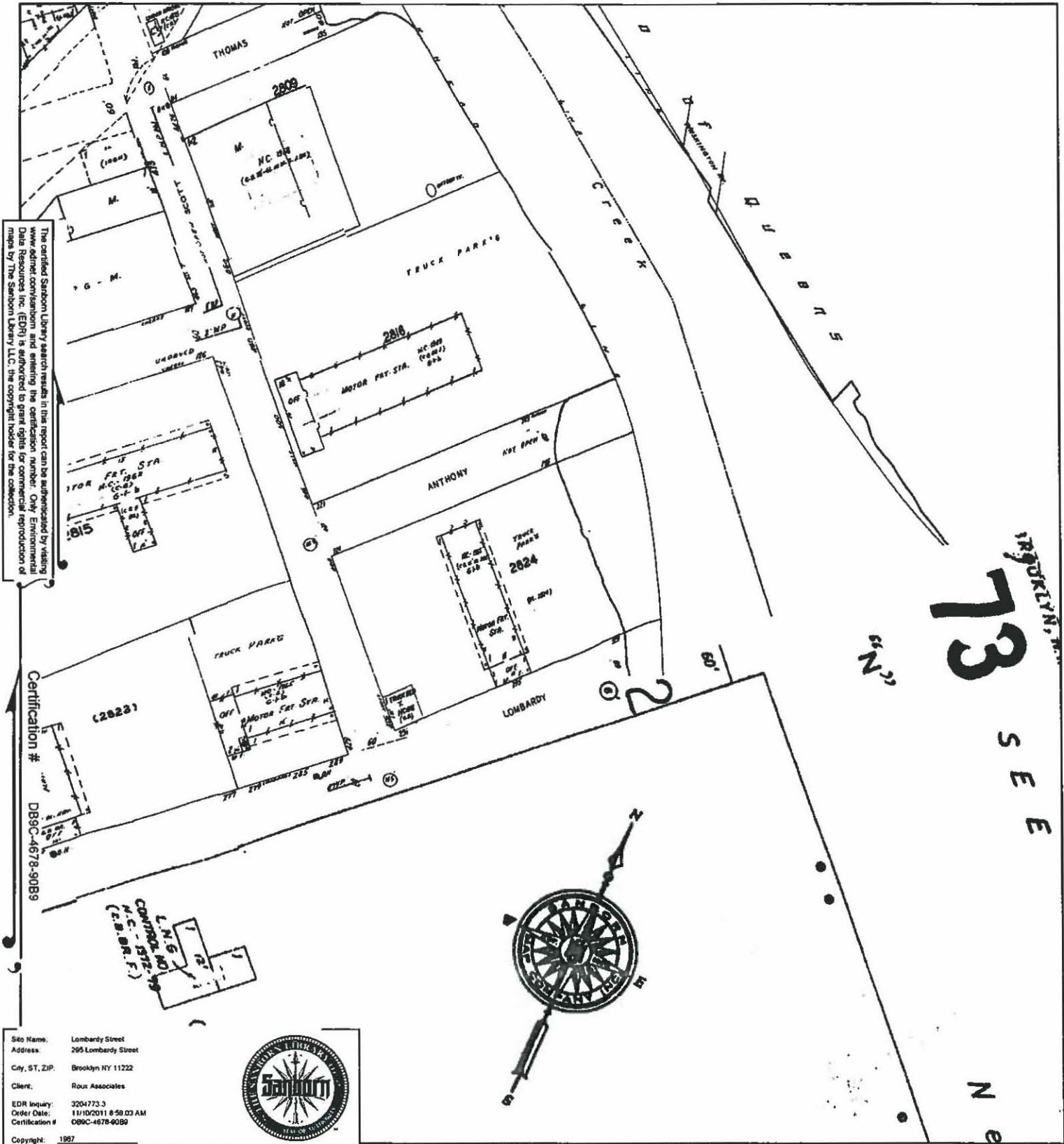


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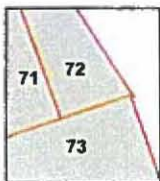
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1987 Certified Sanborn Map



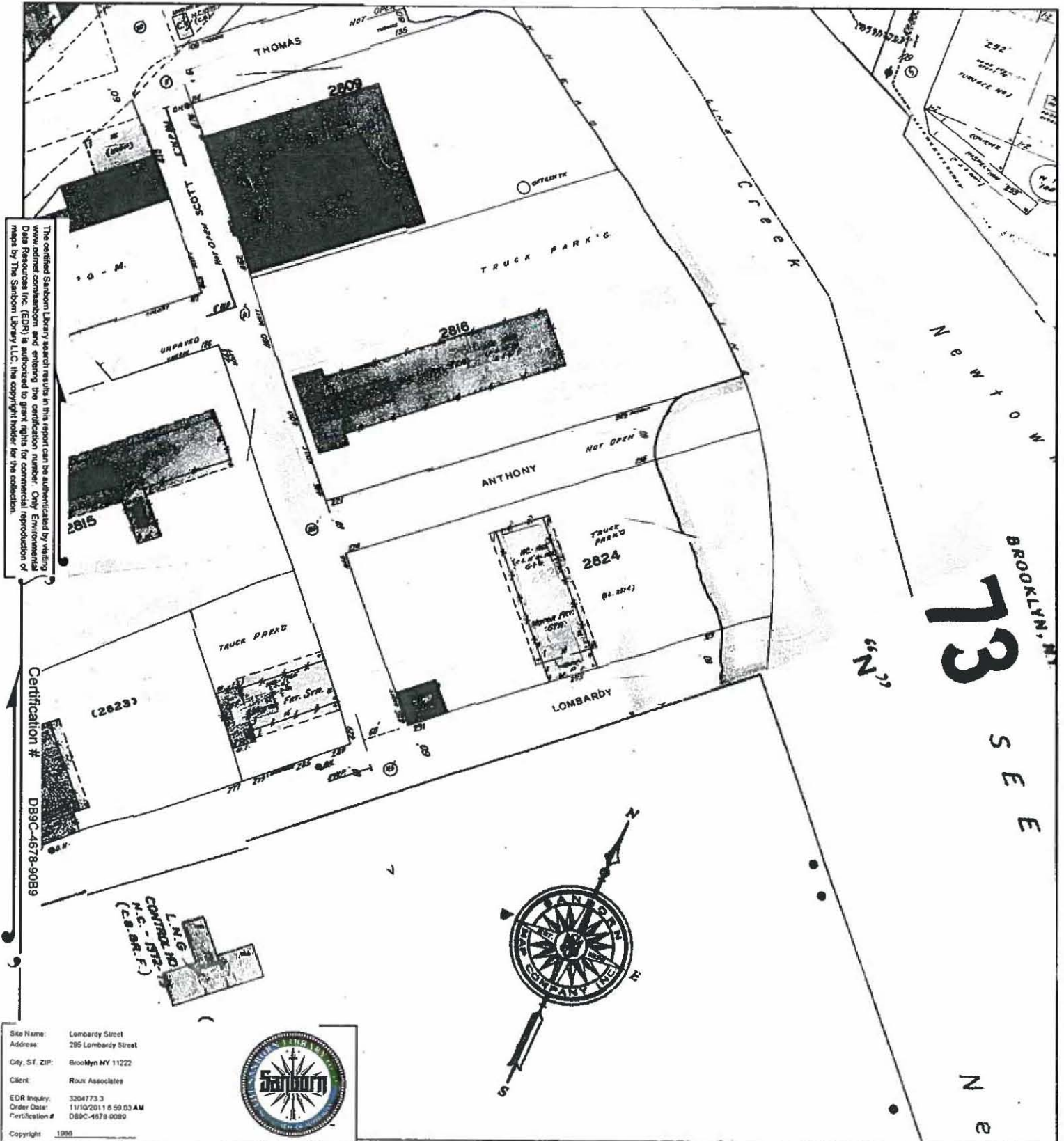
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1986 Certified Sanborn Map

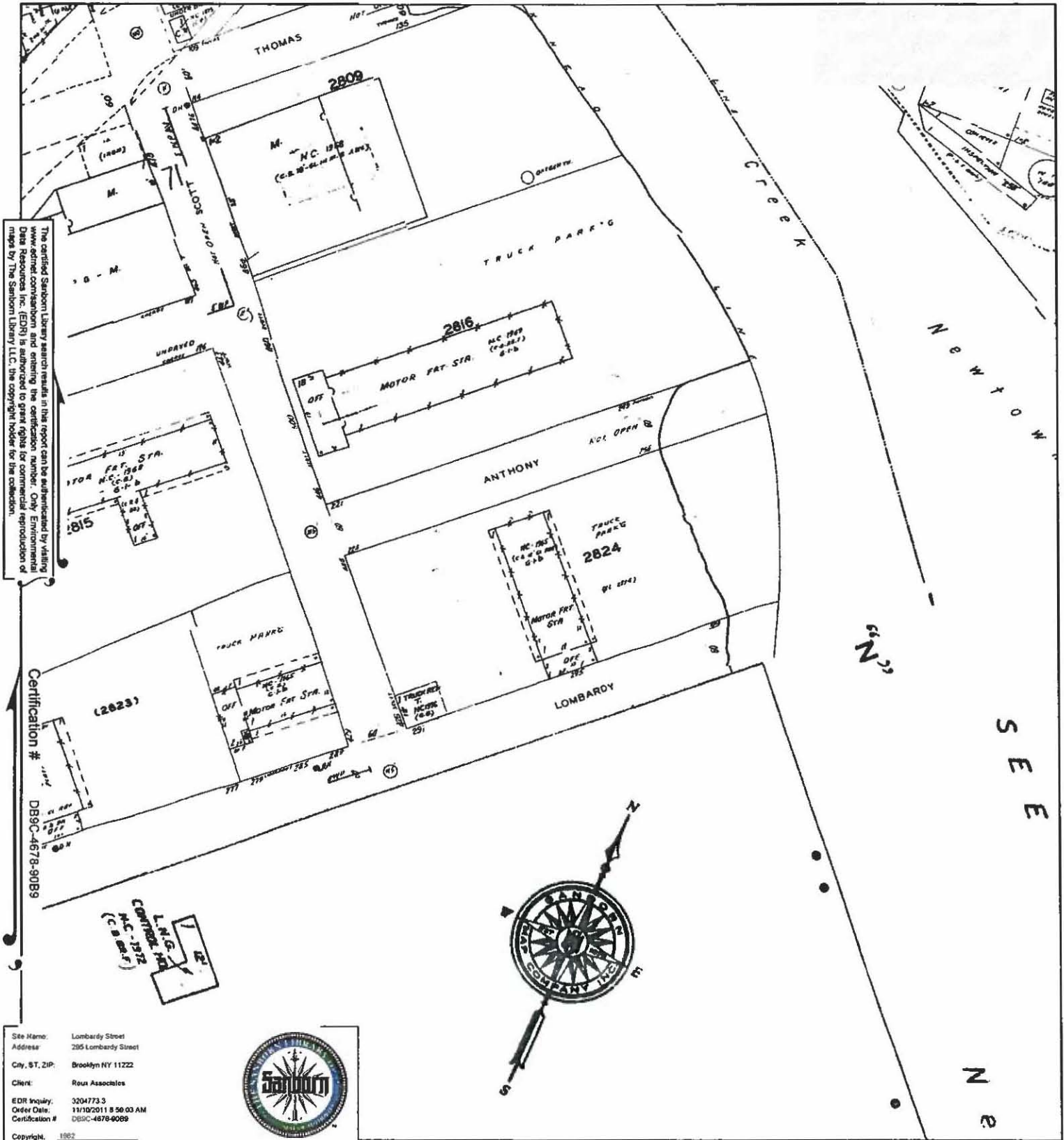


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1982 Certified Sanborn Map



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Certification # DBSC-4678-9089

Site Name: Lombardy Street
 Address: 295 Lombardy Street
 City, ST, ZIP: Brooklyn NY 11222
 Client: Rous Associates
 EDR Inquiry: 3204773.3
 Order Date: 11/10/2011 8:50:03 AM
 Certification # DBSC-4678-9089
 Copyright: 1982

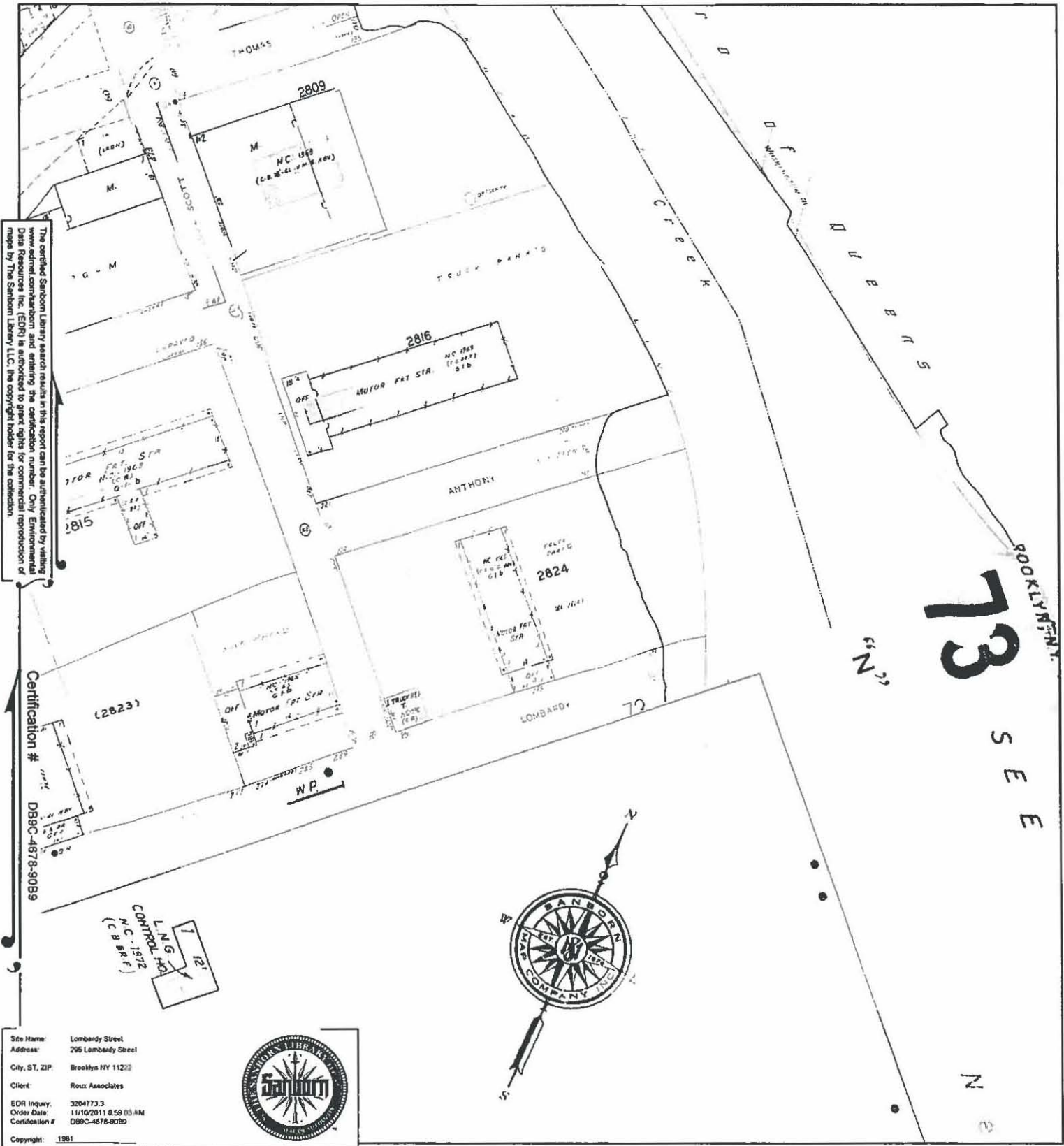


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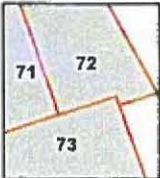
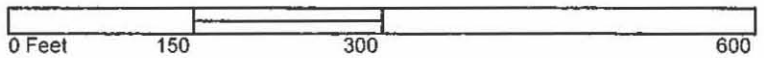


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1981 Certified Sanborn Map

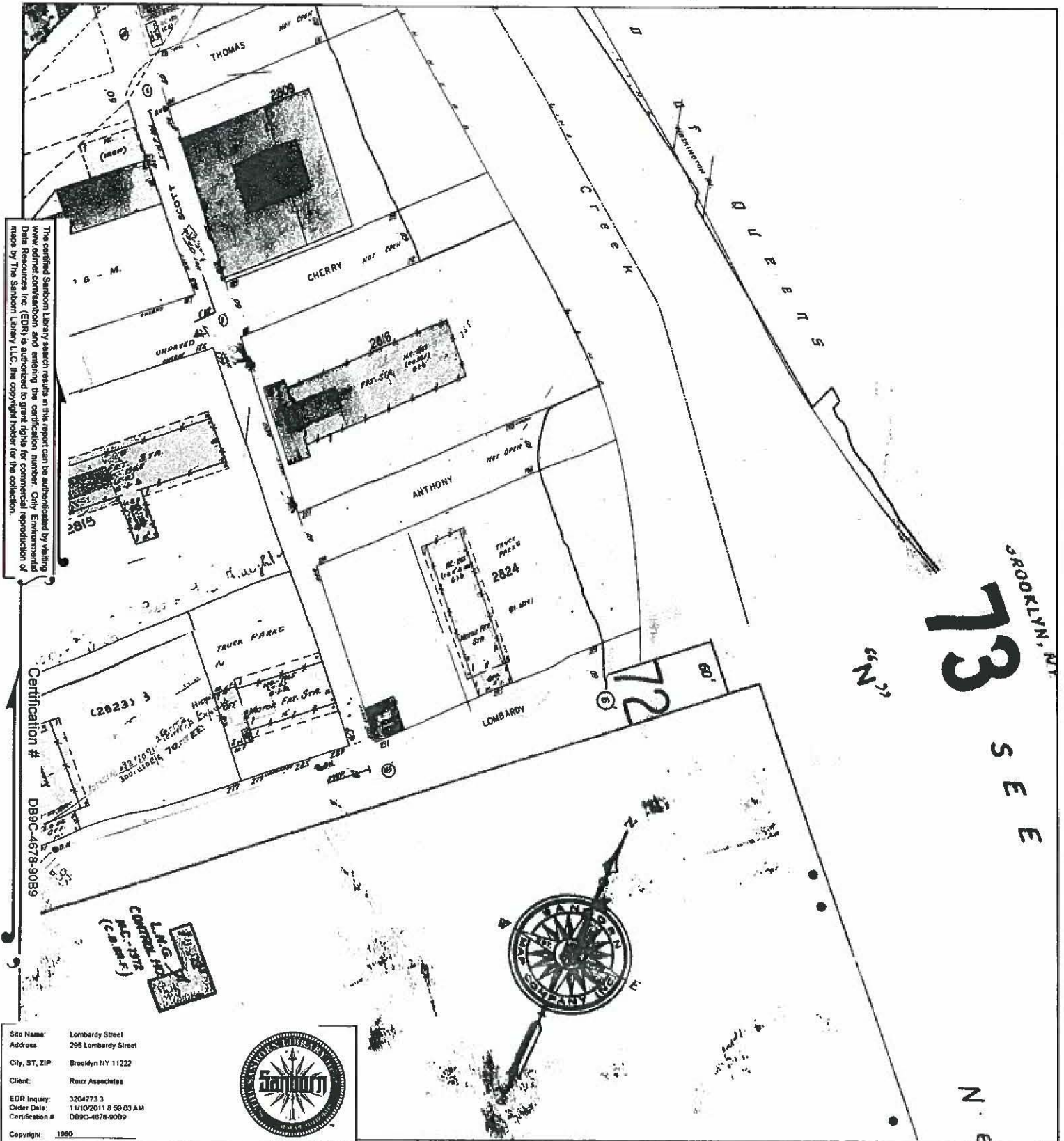


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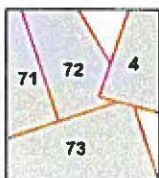


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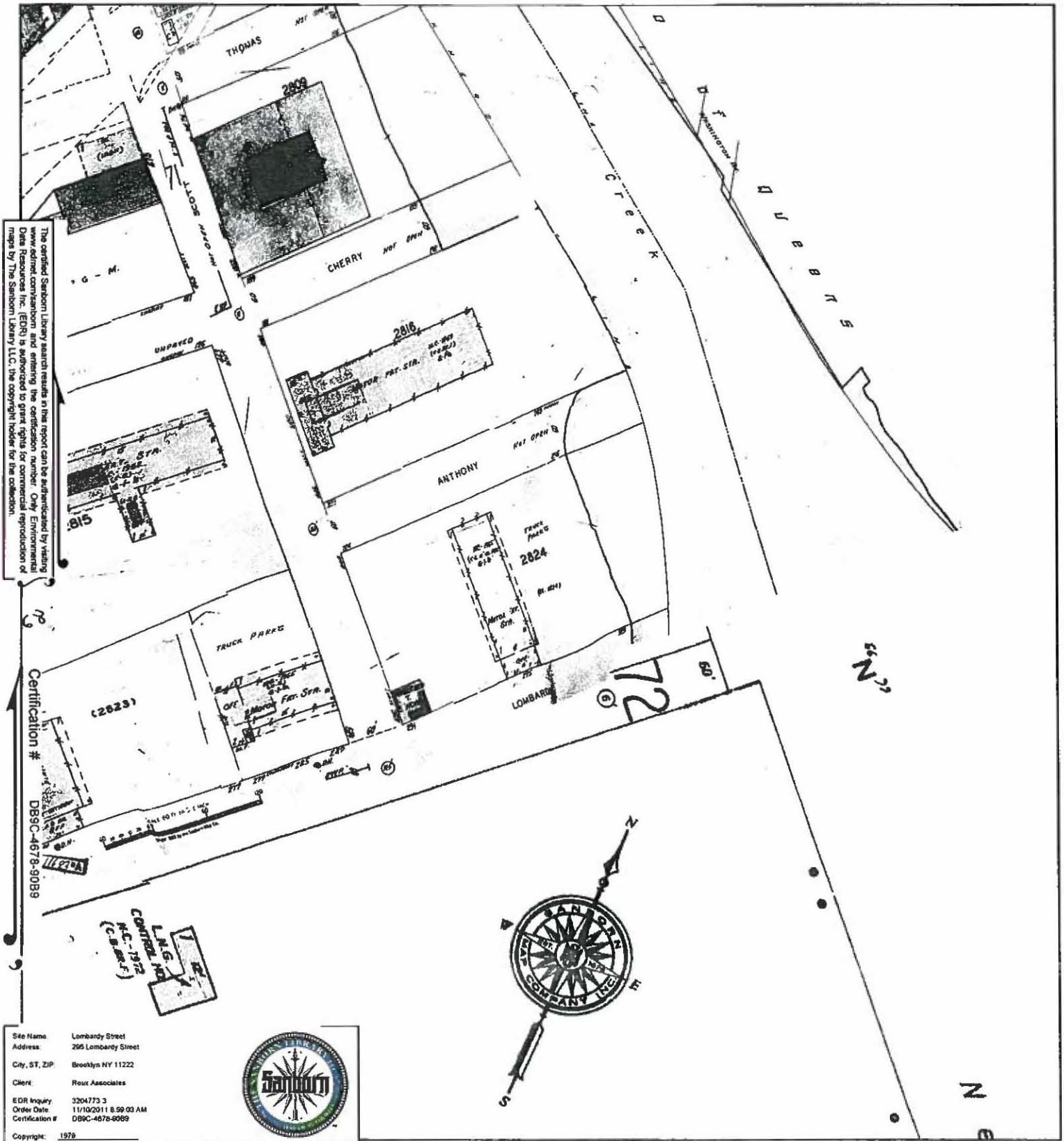
1980 Certified Sanborn Map



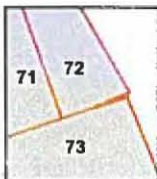
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1979 Certified Sanborn Map

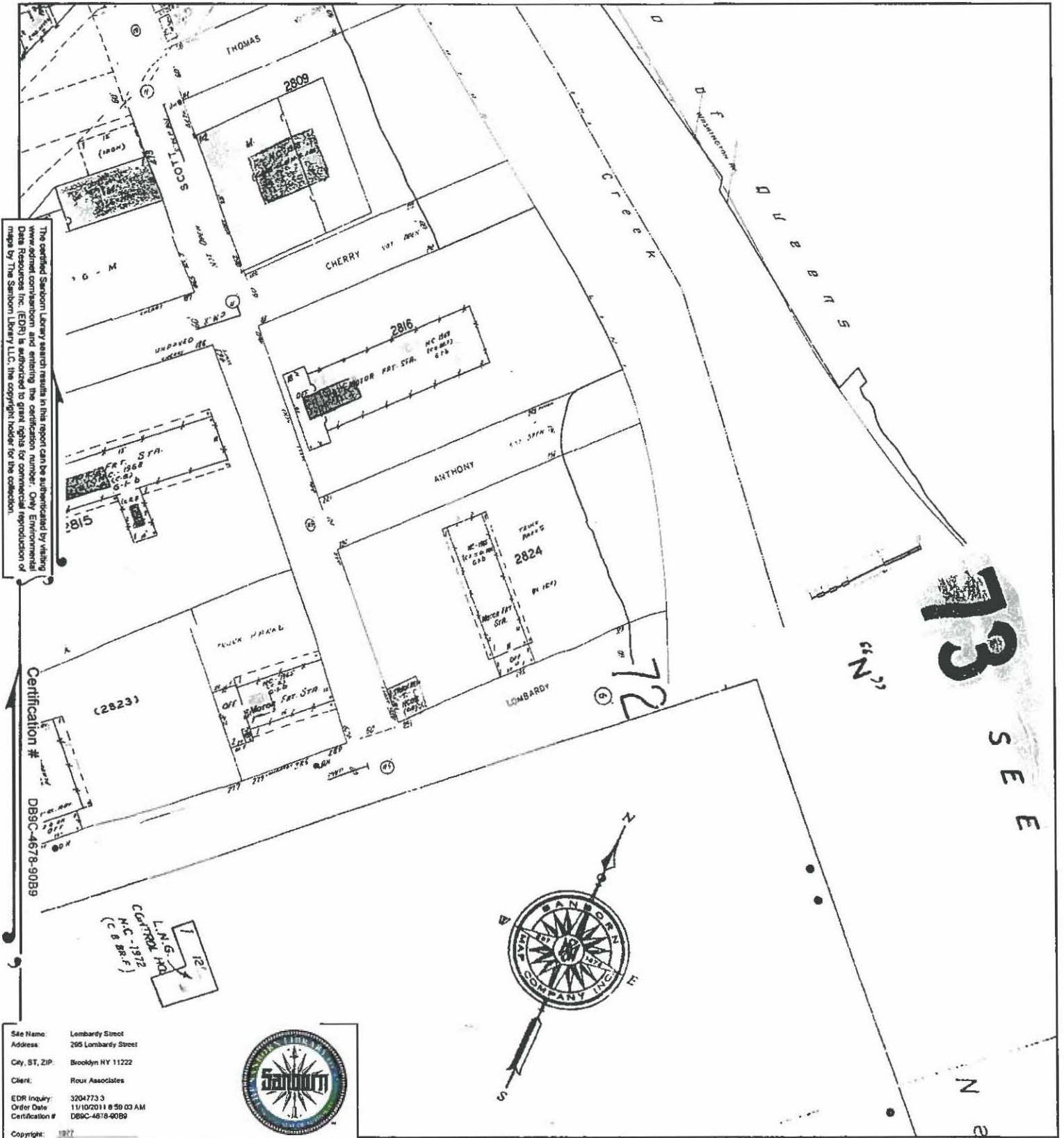


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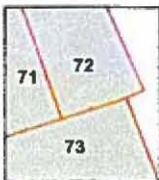


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1977 Certified Sanborn Map



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1976 Certified Sanborn Map

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Certification #

DB9C-4678-9089

Site Name: Lombardy Street
Address: 295 Lombardy Street
City, ST, ZIP: Brooklyn NY 11222
Client: Roux Associates
EDR Inquiry: 3204773.3
Order Date: 11/10/2011 8:59:03 AM
Certification #: DB9C 4678-0000
Copyright: 1976

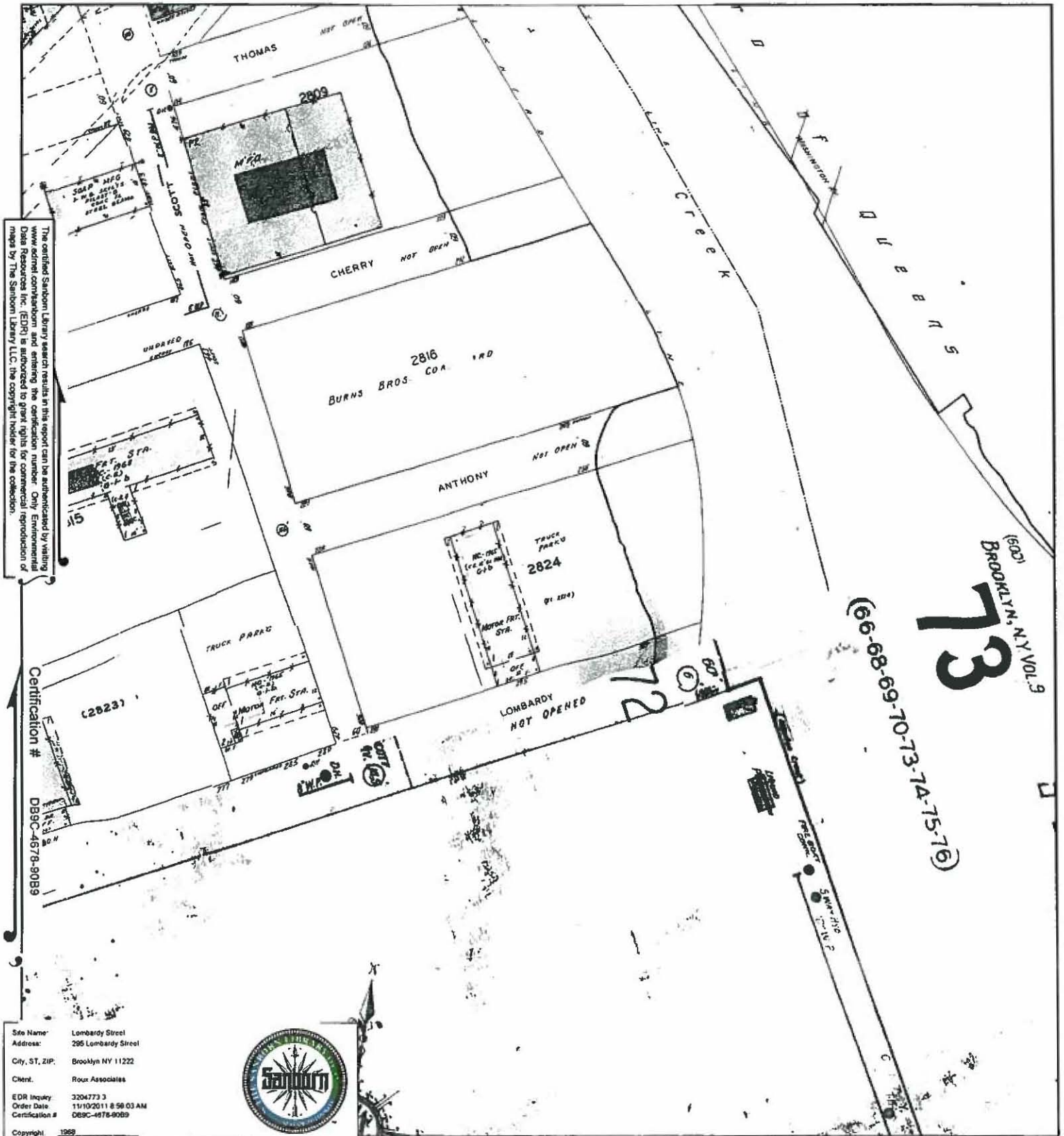


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1968 Certified Sanborn Map



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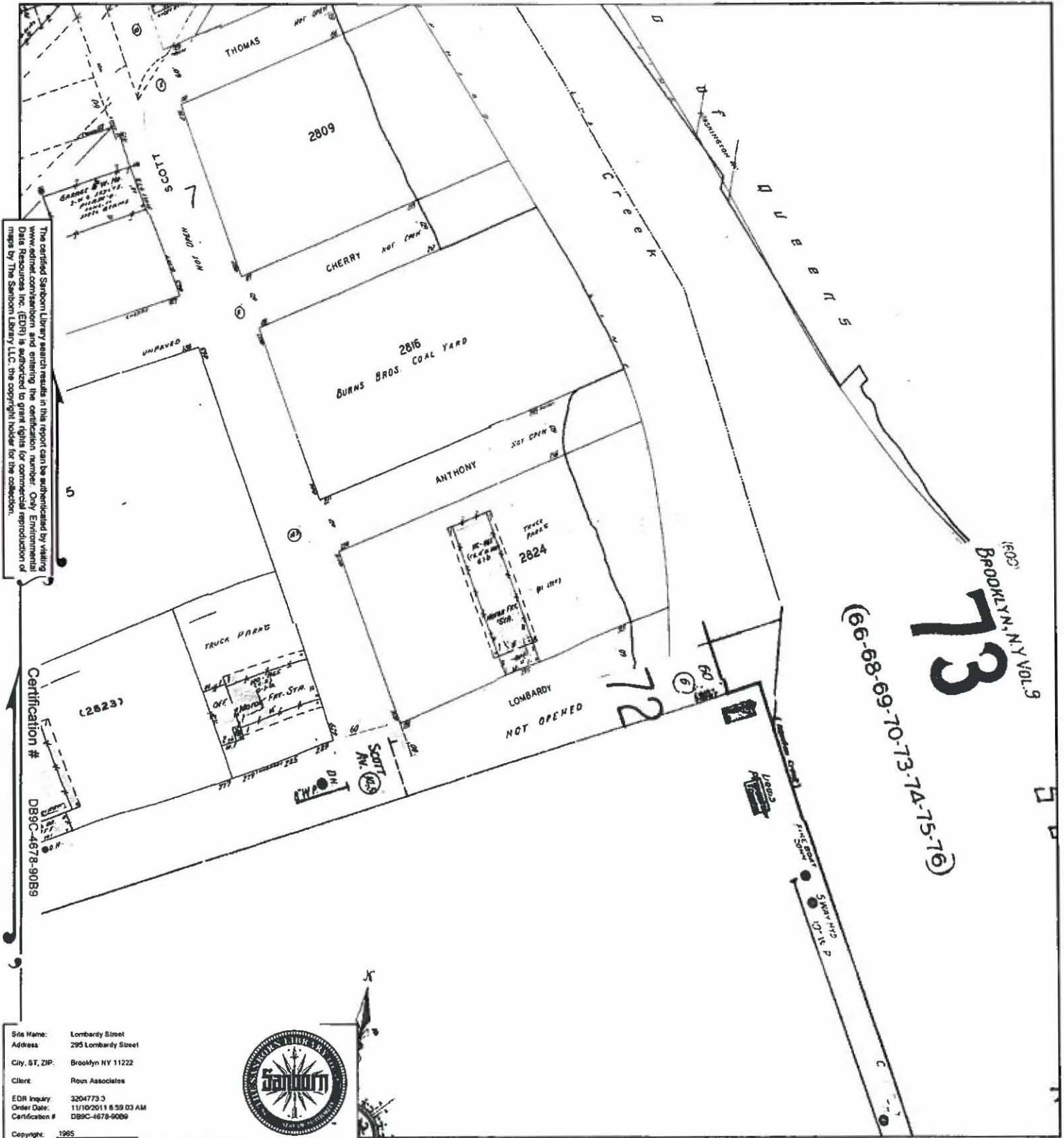


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0 Feet 150 300 600



1965 Certified Sanborn Map



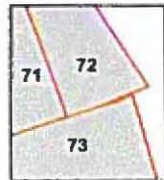
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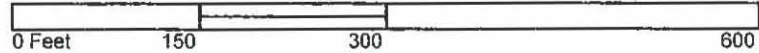
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Address: 295 Lombardy Street
City, ST, ZIP: Brooklyn NY 11222
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EDR Inquiry: 3204773-3
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Certification # DB9C-4678-9089
Copyright: 1965



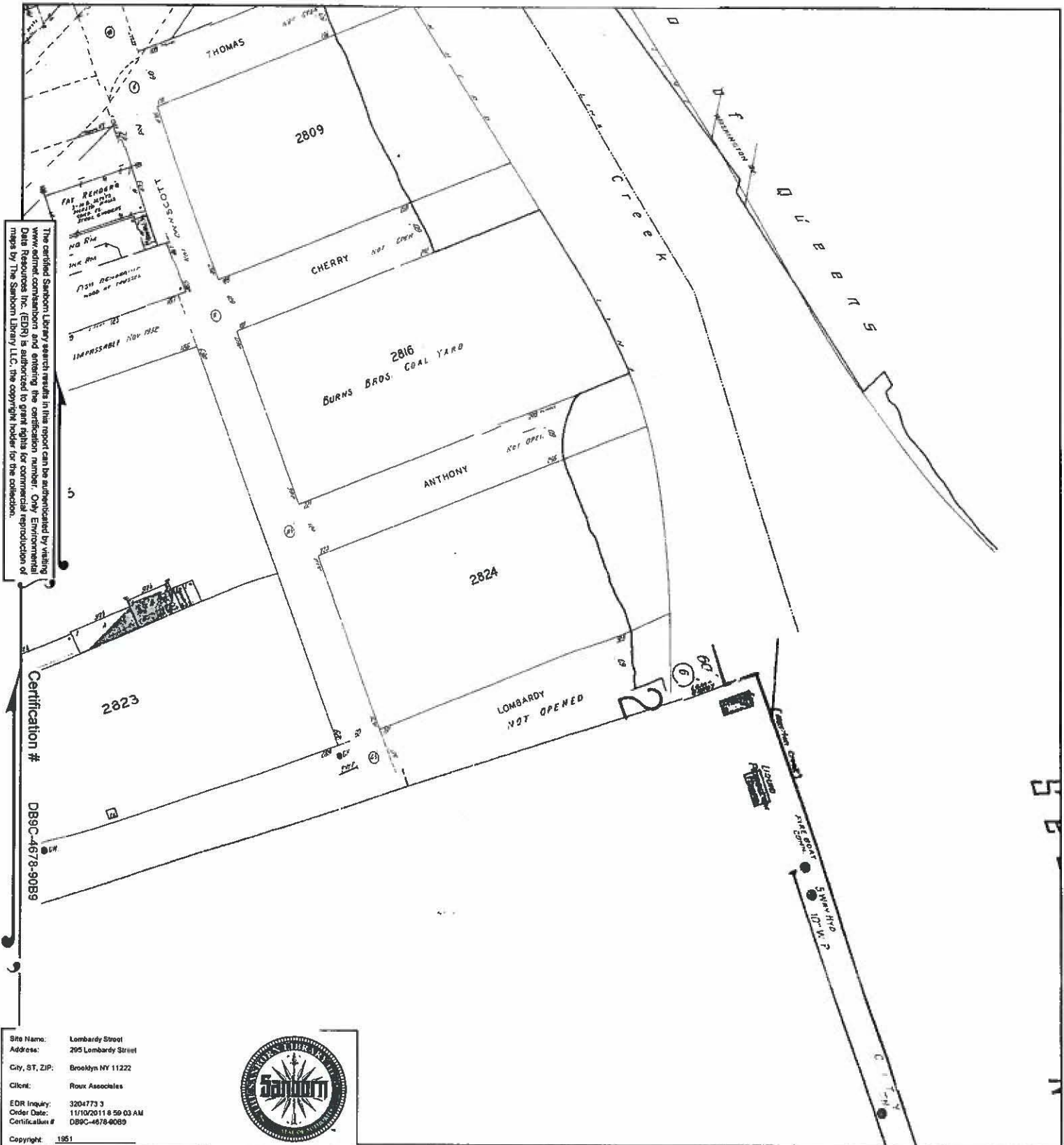
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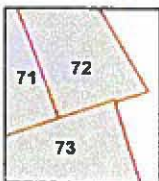
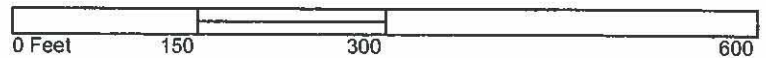
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1951 Certified Sanborn Map



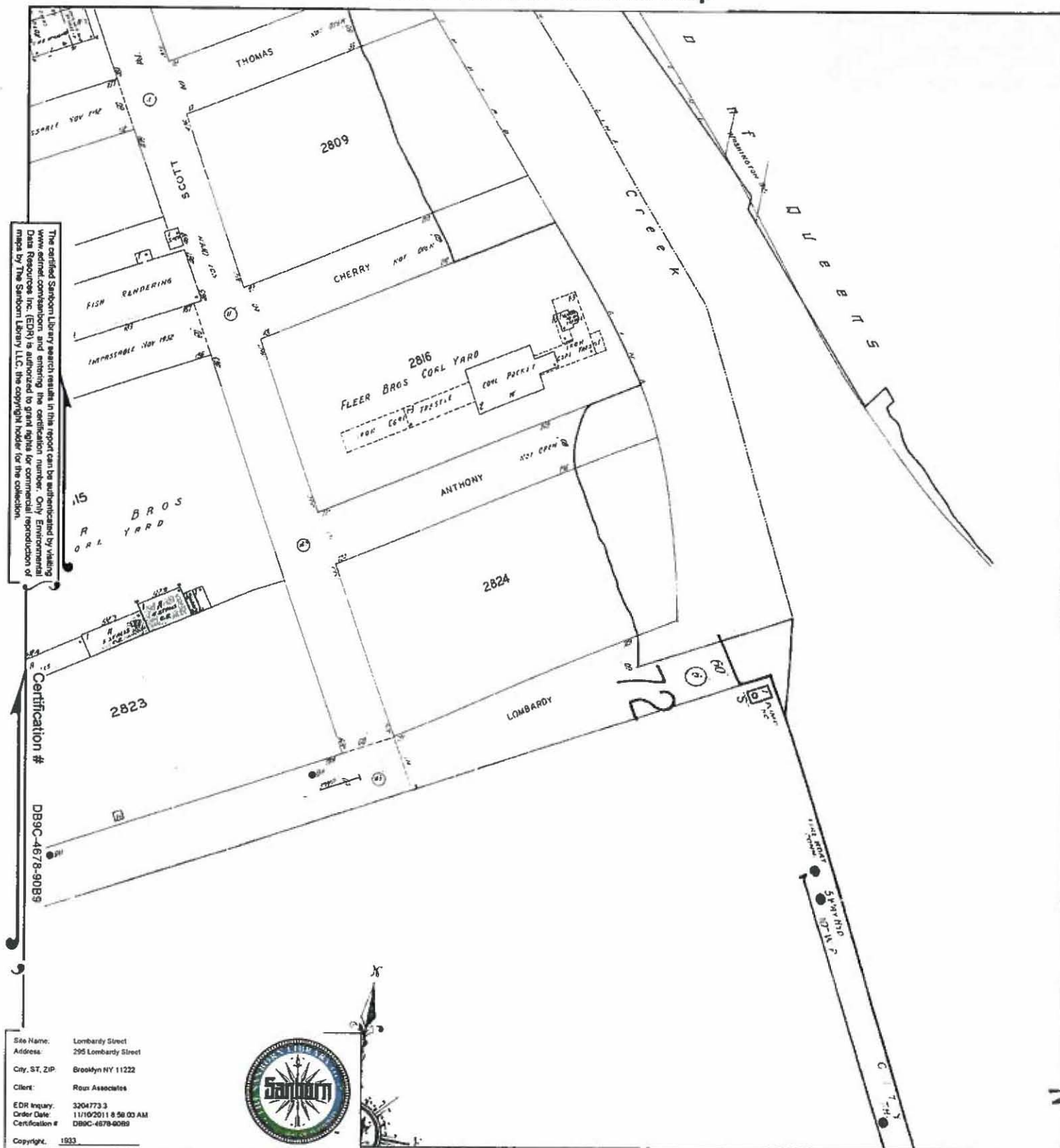
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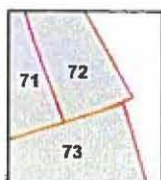
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1933 Certified Sanborn Map



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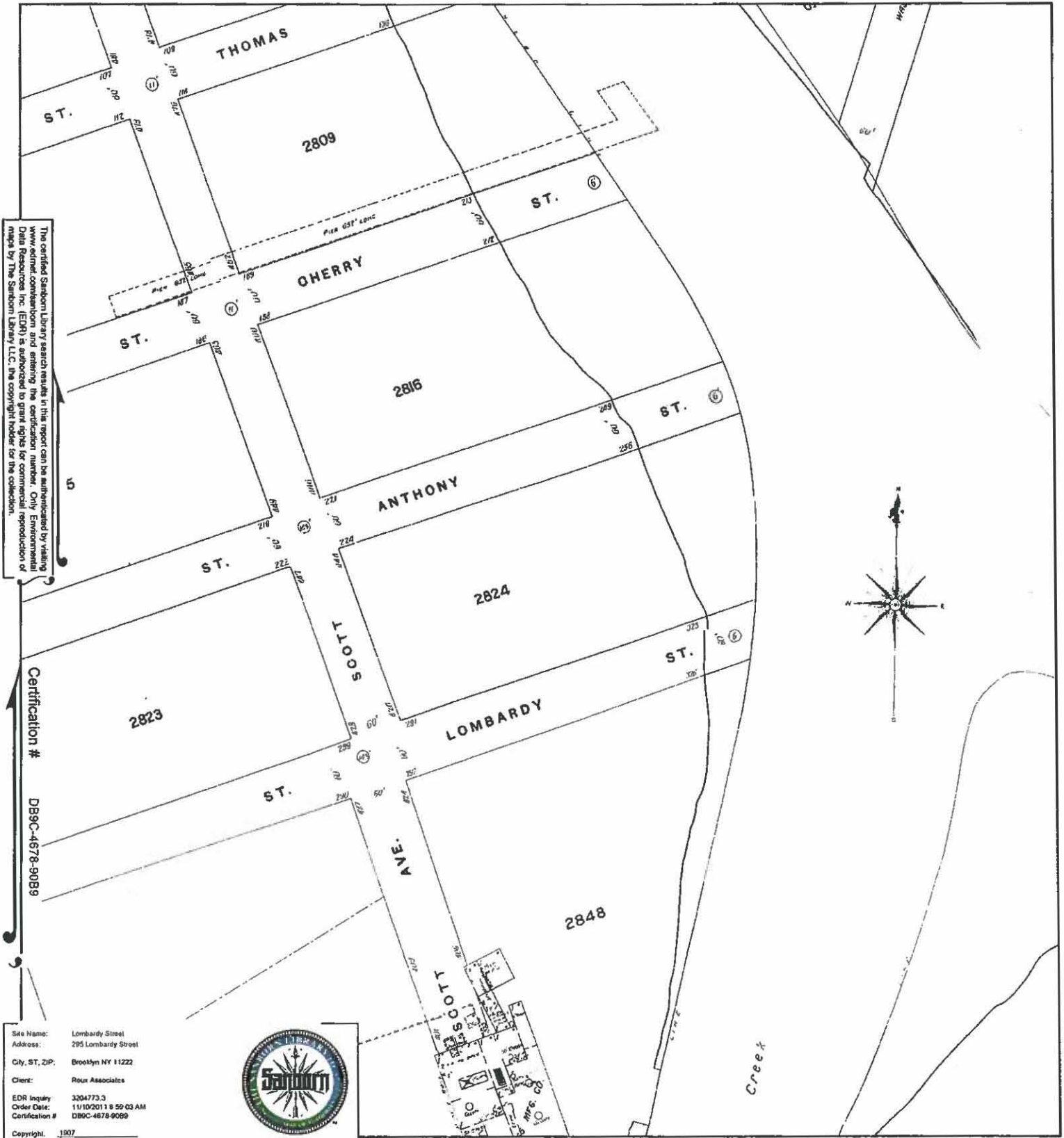


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0 Feet 150 300 600



1907 Certified Sanborn Map



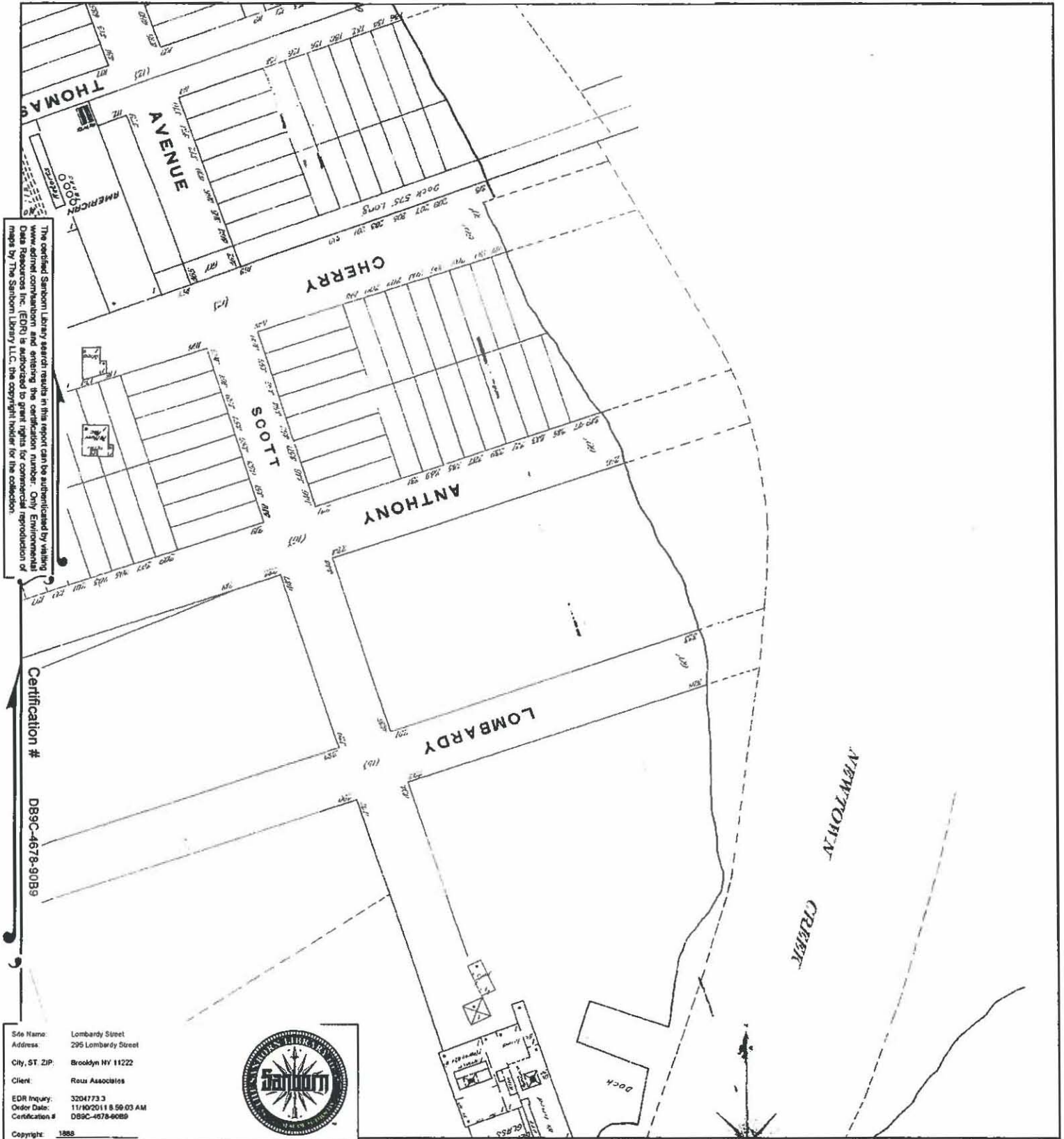
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0 Feet 150 300 600



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Volume 9, Sheet 74

1888 Certified Sanborn Map



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0 Feet 150 300 600



HAZARDOUS MATERIALS SCREENING REPORT

KOSCIUSZKO BRIDGE PROJECT
KINGS & QUEENS COUNTIES, NEW YORK
P.I.N. X729.77.123

Prepared For:

*Parsons Transportation Group of NY, Inc.
100 Broadway
New York, New York 10005-4505*

For Submittal To:

New York State Department of Transportation-Region 11

Prepared By:

*Environmental Planning & Management, Inc.
1983 Marcus Avenue, Suite 109
Lake Success, New York 11042*

June 2005

EXECUTIVE SUMMARY

Environmental Planning & Management, Inc. (EPM), as subconsultant to Parsons Transportation Group of NY, Inc., has completed a Hazardous Materials Screening Investigation for the New York State Department of Transportation (NYSDOT) in connection with the Kosciuszko Bridge Project (PIN: X729.77.123). The project corridor is located along a 1.1-mile section of the Brooklyn Queens Expressway (BQE) from Morgan Avenue in Brooklyn (Kings County) northward to the BQE / Long Island Expressway (LIE) Interchange in Queens County, and includes the Kosciuszko Bridge over Newtown Creek. This assessment was conducted to identify areas along the project corridor that could contain hazardous materials with a potential to impact the construction phase of the project. The results of this assessment can be used to identify where the collection and analysis of soil and/or groundwater samples may be warranted to characterize the actual conditions of areas of concern. The sampling results can then be used to avoid contaminated areas if feasible, identify appropriate material handling and disposal options, and identify public and worker health and safety precautions required during construction.

Several design alternatives are currently being considered for the project (refer to section 1.4). The build alternatives being considered all include new construction of permanent and/or temporary parallel bridges on one or both sides of the existing structure. Construction will require excavation for placement of support structures, foundations, and possible utility relocation. Excavations that approach Newtown Creek could encounter groundwater, thus requiring dewatering. Construction operations that extend greater than approximately 30 feet below grade in the vicinity of Van Dam and Varick Streets in Brooklyn have the potential to encounter a free-phase petroleum plume known to exist in the area.

Properties along the project corridor were evaluated based on two primary criteria, 1) the known or suspected presence of hazardous materials, and 2) the probable impacts to any of the design alternatives by a potentially contaminated site. Thus, a property could be considered potentially contaminated and not considered a candidate for further investigation if the soils or groundwater of the property will not be disturbed during the construction phase. This assessment consisted of a visual site reconnaissance in January 2005 to identify current land use; a review of prior land use as depicted on historical Sanborn Maps dating to 1888, and a review of Federal, State, and local agency environmental records. The assessment focused on identifying locations of underground or aboveground storage tanks, hazardous waste generators, and properties with reported hazardous material spills. A preliminary asbestos survey was also conducted to identify potential asbestos containing utilities and building materials within the limits of the project corridor, the results of which will be provided under separate cover. The asbestos survey was limited to a review of utility and bridge record plans provided to EPM.

Each property along the project corridor was assigned an impact potential level of "Low, Moderate, or High." The "Low, Moderate, or High" designation represents an increased potential (low to high) that suspected or identified contamination at a property may adversely impact the project. Thirty-five (35) areas of concern (AOCs) were identified along the project corridor with a High impact potential. A summary of each AOC is provided in the following table, with their locations relative to the project corridor indicated on Figures 3-1 through 3-6.

The sediments of Newtown Creek in the vicinity of the project corridor are known to be contaminated with various heavy metals, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs). Although current design options do not include construction of bridge support structures in Newtown Creek, it is possible that one or more barge docking areas could be constructed for ingress and egress of construction materials and waste products. Construction of the barge docking area(s) would likely require excavation and removal of Newtown Creek sediment. If dredging is conducted, a permit would be required from the New York State Department of Environmental Conservation (NYSDEC). As a stipulation of the dredging permit, sampling and laboratory analysis of sediment in the proposed areas of dredging would be required according to a pre-approved sediment sampling and analysis plan.

Groundwater encountered during construction activity along the project corridor will likely be contaminated to some degree based on the industrial nature of the area. A free-phase petroleum plume is known to exist in the vicinity of the project site in Brooklyn. EPM reviewed a groundwater monitoring report prepared by Remedial Engineering, P.C., on behalf of ExxonMobil Corporation, identified as *The Ninety-Third Operation and Maintenance Report, 1st Quarter, 2005, Off-Site Free-Product Recovery System, Greenpoint, Brooklyn, New York*, dated April 27, 2005. The report includes data for groundwater and free product level measurements collected on February 28, 2005. The report also includes a free-product occurrence map based on the February 2005 data, which shows the presence of free-product in the vicinity of the project site in Brooklyn near Van Dam and Varick Streets. Free product thickness in the vicinity of the project site is reported to range from non-existent to approximately 1 foot, and is located at depths ranging from approximately 35 to 40 feet below grade. If free-phase petroleum product is encountered during construction dewatering, removal of the product and likely treatment to remove dissolved phase contaminants would be required prior to discharge to the NYC sewer system or discharge to Newtown Creek under a State Pollutant Discharge Elimination System (SPDES) Permit.

Sample collection and laboratory analysis of potentially contaminated materials would be required to determine actual site conditions. If conducted, the sampling should include the advancement of soil borings to the proposed depths of excavation, and the collection of soil and/or groundwater samples for laboratory analysis.

The preliminary asbestos survey identified suspect asbestos containing materials in underground utilities and in Kosciuszko Bridge construction materials. Sample collection and analysis of suspect material likely to be disturbed during construction would be required to confirm the presence/absence of asbestos.

Investigation / Feasibility Study (RI/FS) which identified additional areas of contamination at the site. Phelps Dodge Refining Corporation entered into a new Consent Agreement in January 2003 to conduct further investigation and implement remedial measures as necessary.

- *Peerless Property*, located at 3850 Review Avenue, approximately 2,125 feet to the west of the project corridor, is listed as a CERCLIS site with no further remedial action required. No additional information was provided for this site.

The Phelps Dodge Refining Corporation site has the potential to have impacted the environmental conditions of the project corridor due to the site's proximity to the project corridor and the documented presence of soil and groundwater contamination. The remaining identified CERCLIS sites are not considered to have a significant potential to impact the project corridor due to their distances and directions, and/or the fact that no further remedial action is planned by USEPA.

3.4.3 National Priorities Listing (NPL)

The National Priority List (NPL) is compiled by the United States Environmental Protection Agency (USEPA) pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or "Superfund"), and includes properties with the highest priority for cleanup pursuant to EPA's Hazard Ranking System.

There are no sites identified on the NPL database as located within a ½-mile radius of the project corridor.

3.4.4 Hazardous Substance Waste Disposal Sites (HSWD)

The New York State Hazardous Substance Waste Disposal site database is a listing of contaminated sites that can pose environmental or health hazards. These sites are not eligible for State funded cleanup. The HSWD sites identified on the database within a ½-mile radius of the project corridor are as follows:

Kings County

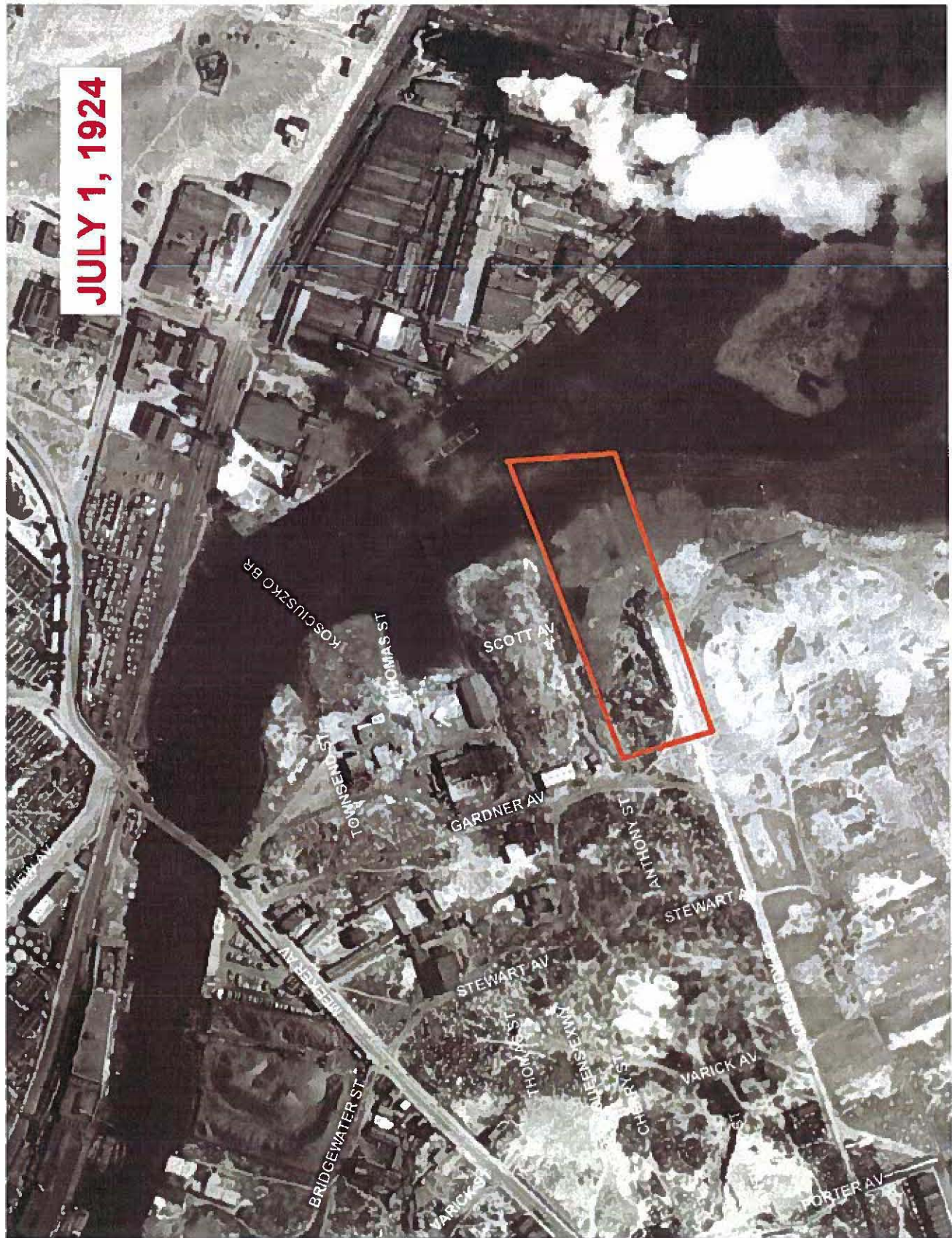
- *Brooklyn Union Gas/Varick Gate Station*, located at 438 Varick Avenue is located approximately 600 feet south of the project corridor. Since January 1981 the liquid condensate in Brooklyn Union Gas pipelines have been known to be contaminated with PCBs. The condensates are removed via scrubbers, stored in underground tanks until tested for PCBs, and disposed of accordingly. Hazardous substances disposed of include PCBs.
- *Nassau Tank Cleaning Co.*, is located at 323 Nassau Street approximately 723 feet west northwest of the project corridor. This site has been removed from the Hazardous Substance Inventory since there was no evidence of disposal

- *Lombardy Street Landfill*, is located at 295 Lombardy Street approximately 782 feet east of the project corridor. A pharmaceutical manufacturer historically disposed of mixed industrial wastes onsite. The site has been graded and covered with asphalt since 1964. Hazardous substances disposed of include solid fermentation residue (mycelium) and burnable trash were disposed of along with other possible hazardous wastes. This site has been removed from the Hazardous Substance Inventory since there was a minimal probability of significant threat.
- *City Barrel* is located at 421 Meeker Avenue approximately 1,790 feet west southwest of the project corridor. The site is used to store reconditioned drums. This site has been removed from the Hazardous Substance Inventory since there was no evidence of disposal.
- *Brooklyn Union Gas/Equity Works*, located at Maspeth and Morgan Avenue is approximately 2,054 feet south southwest of the project corridor. By-products produced when the plant was operating included hydrocarbon tar which was temporarily stored onsite until sold. According to Brooklyn Union Gas, when the plant was decommissioned in 1928 the remaining tars were reportedly removed and the facility was razed. Hazardous substances disposed of include suspected PCBs.
- *Brooklyn Union Gas/Greenpoint Energy Facility*, located at 287 Maspeth Avenue is approximately 2,265 feet southeast of the project corridor. This site is Brooklyn Union's main storage, distribution, and production facility. The facility includes a plant that converts naphtha to natural gas, a heated tank where liquid natural gas is vaporized, two natural gas storage tanks, and two gate stations. Hazardous substances disposed of include PCBs, lead, chromium, potassium nitrate, mercury, and vanadium pentaoxide.
- *Brooklyn Union Gas/Maspeth Gate Station*, located at 285 Maspeth Avenue is approximately 2,265 feet southeast of the project corridor. Since January 1981 the liquid condensate in Brooklyn Union Gas pipelines have been known to be contaminated with PCBs. The condensates are removed via scrubbers, stored in underground tanks until tested for PCBs, and disposed of accordingly. Hazardous substances disposed of include suspected PCBs.
- *Mobil Oil Brooklyn Terminal*, located at 300 North Henry Street is approximately 2,389 feet west northwest of the project corridor, adjacent to Newtown Creek. This site has been removed from the Hazardous Substance Inventory since petroleum products are non-qualifying wastes.

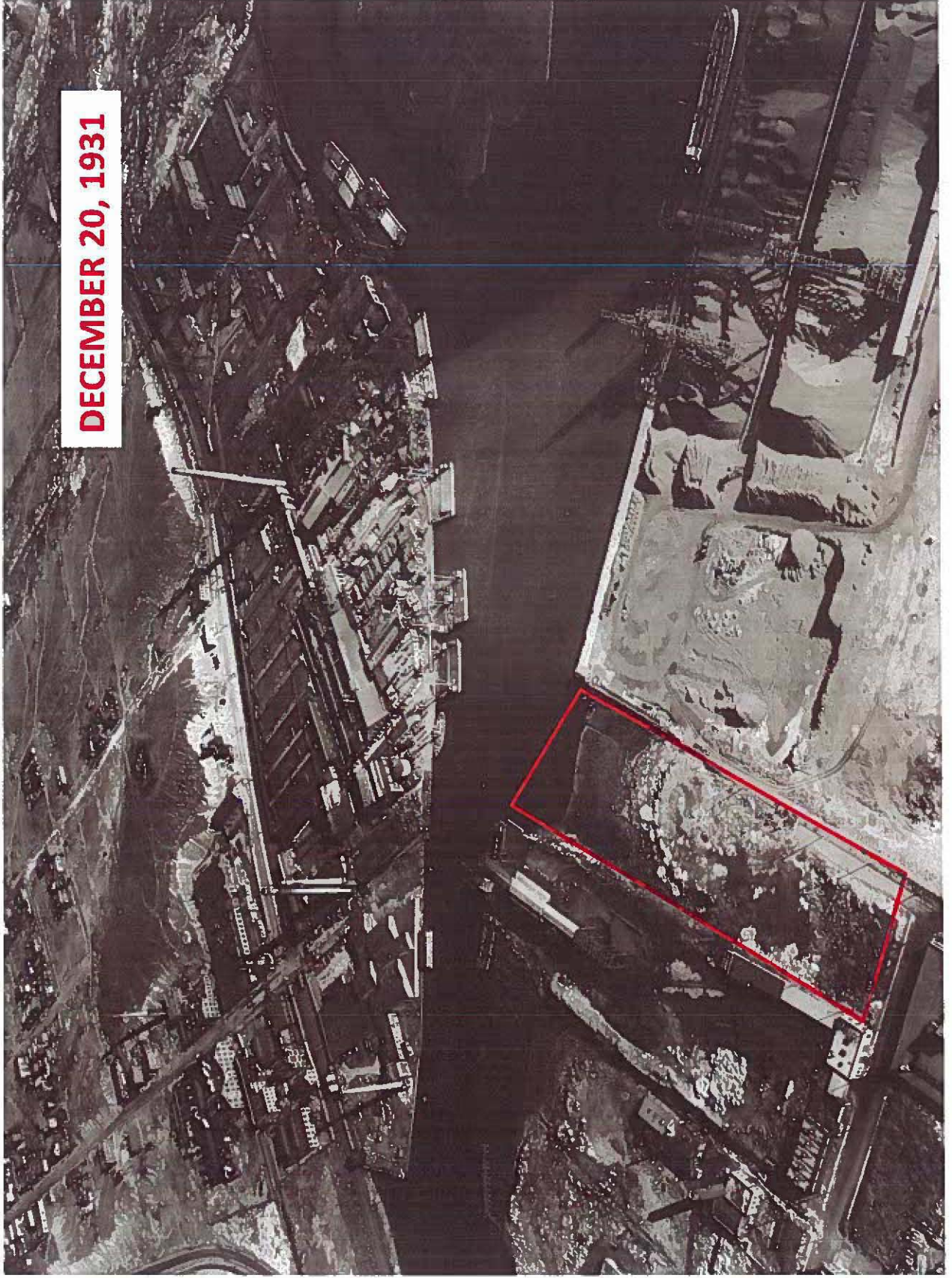
Queens County

- *Peerless Property*, located at 3850 Review Avenue is approximately 2,128 feet to the west of the project corridor. Before 1972, unknown amounts of Xylene and Toluene were handled and stored at this facility. Accidental leaks or spills

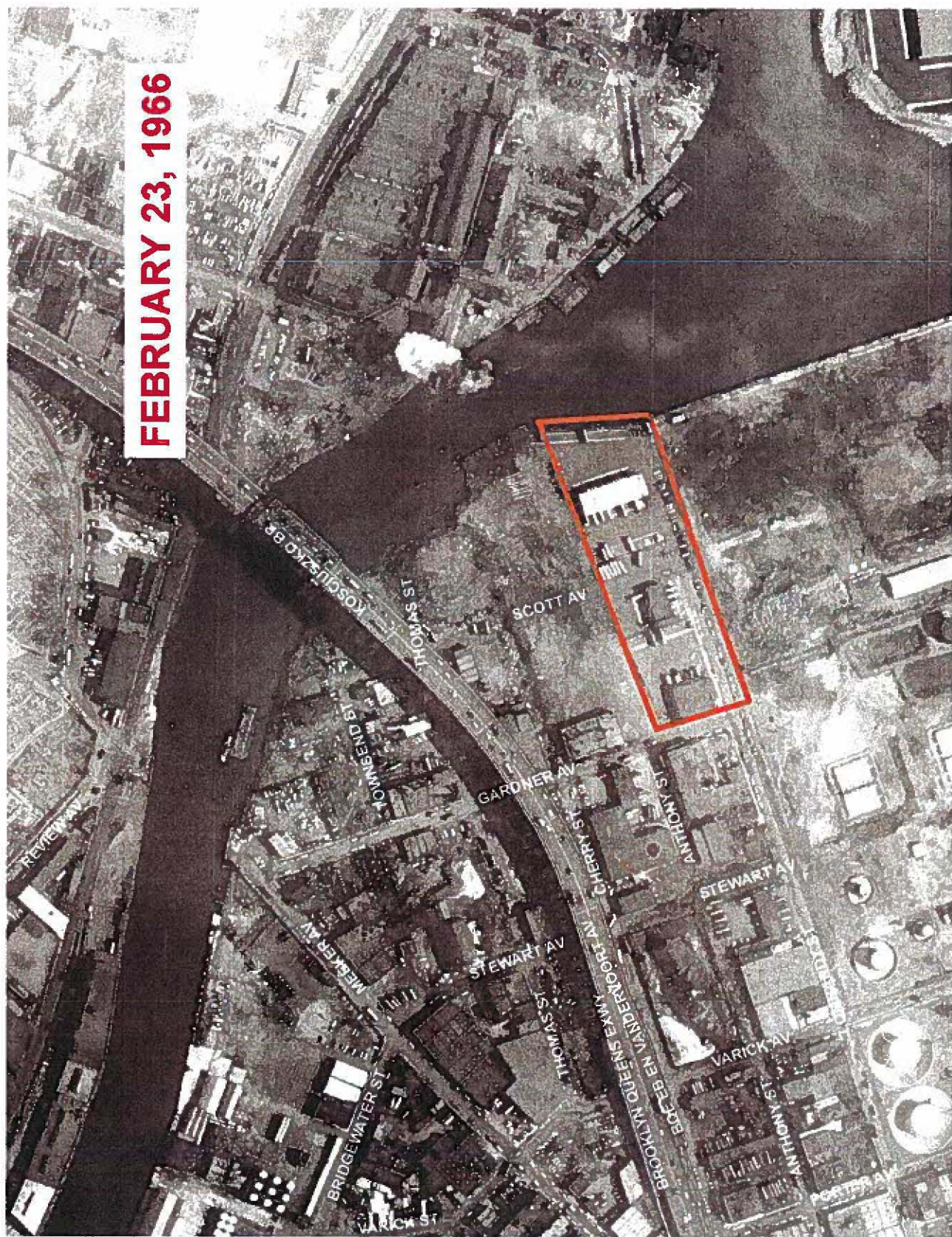
JULY 1, 1924



DECEMBER 20, 1931



FEBRUARY 23, 1966



[illegible]



**BLOCK/LOT NUMBERS FOR
OUTLINED PROPERTY**

**RESPONSE OF PFIZER INC.
TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S
REQUEST FOR INFORMATION, DATED OCTOBER 25, 2011 – NEWTOWN CREEK
SUPERFUND SITE, KINGS COUNTY AND QUEENS COUNTY, NEW YORK**

EXHIBIT 2



First American Title

First American Title Insurance Company
633 Third Avenue, 16th Floor
New York, NY 10017
(212)922-9700 - Fax (212)922-0881

November 17, 2011

First American Title Insurance Company -, Washington, DC
1825 I Street Northwest, Suite 302
Washington, DC 20006-5463
Attn: Brian Lobuts

RE: Title No.: 3008-366882
 Premises: 295 Lombardy Street,
 Brooklyn, New York
 Block: 2824

 Lot: 10

 Owner:

Dear Mr. Lobuts,

As per your request, we have searched the Kings County Register's Office for the deed chain from 1907 to date of record against the above mentioned premises and have found the following:

Deed made by Richard Willard and Katherine C. Willard, husband and wife to Bullion Realty Company dated 4/27/1907 recorded 6/24/1907 in Liber 3008 Page 286.

Deed made by Bullion Realty company to Charles Pfizer & Company, Inc. dated 8/5/1924 recorded 8/6/1924 in Liber 4427 Page 439.

Deed made by Chas Pfizer & Co., Inc. to Scott Realty Co. dated 8/28/1963 recorded 9/5/1963 in Liber 9165 Page 489.

Correction Deed made by Chas Pfizer & Co., Inc. successor by merger to Cha Pfizer & Company, Inc. to Scott Realty Co. dated 1/3/1964 recorded 1/21/1964 in Liber 9214 Page 3.

Deed made by Scott Realty Co. to Edith Blau dated 12/16/1964 recorded 12/21/1964 in Liber 9334 Page 425.

Deed made by Edith Blau to Scott Realty Co. dated 12/16/1964 recorded 12/21/1964 in Liber 9334 Page 419.

Deed made by Scott Realty Co. to Morgan Realty Company dated 11/16/1984 recorded 11/26/1984 in Reel 1577 Page 244.

Deed made by Morgan Realty Company et al to Preston Trucking Company, Inc. dated 5/3/1991 recorded 6/5/1991 in Reel 2703 Page 2306.

This search has been issued only for the benefit of the applicant to whom the search is addressed and is for information only and not guaranteed or insured. Liability for the search and the information provided herein, whether based on contract or negligence, is limited to the amount paid for the search.

If we can be of any further assistance, please feel free to call.

Very truly yours,

Veronica Kearney

Veronica Kearney
Special Services

/VK



First American Title

First American Title Insurance Company

633 Third Avenue, 16th Floor

New York, NY 10017

Phone: (212)922-9700 / Fax: (212)922-0881

PR: NYORK

Ofc: 3008 (1375)

Final Invoice

To: First American Title Insurance Company - Washington, DC
1825 I Street Northwest
Suite 302
Washington, DC 20006-5463

Invoice No.: 1375 - 300885282

Date: 11/17/2011

Our File No.: 3008-366882

Title Officer:

Escrow Officer:

Customer ID: 2463752

Attention: Brian Lobuts

Your Reference No.:

RE: Property:
295 Lombardy Street, Brooklyn, NY

Liability Amounts

Owners:

Lenders:

Buyers:

Sellers:

Description of Charge	Invoice Amount
Deed Chain	\$375.00

INVOICE TOTAL **\$375.00**

Comments:

Thank you for your business!

To assure proper credit, please send a copy of this Invoice and Payment to:

Attention: Accounts Receivable Department

shall have the right to do so, providing they cause the same to be removed and replaced at their expense, whenever the said repairs, alterations or improvements shall have been completed 12th. It is expressly agreed and understood by and between the parties to this agreement that the landlord shall not be liable for any damage or injury by water which may be sustained by the said tenant or other person; or for any other damage or injury resulting from the carelessness, negligence or improper conduct on the part of any other tenant or agents or employees, or by reason of the breakage, leakage or obstruction of the croton water or soil pipes, or other leakage in or about the said building. 13th. That if default be made in any of the covenants herein contained, then it shall be lawful for the said landlord to re-enter the said premises, and the same to have again, repossess and enjoy. The said tenant hereby expressly waive the service of any notice in writing of intention to re-enter, as provided for in the third section of an Act entitled "An Act to abolish Distress for Rent and for other purposes" passed May 13, 1846. 14th. The tenant at the execution hereof deposits with the landlords the sum of thirty six (\$36.00) dollars, the receipt whereof is hereby acknowledged, which said sum shall be held by the landlords as security for the faithful performance of all of the covenants, conditions and agreements herein contained on the part of the tenant and also as security for the payment of the rent herein agreed to be paid, and to be returned to the tenant at the expiration of this lease, provided, however, that at such time, the tenant shall have fully and properly complied with all of the covenants, conditions and agreements herein contained. AND the said landlords doth covenant that the said tenant on paying the said yearly rent, and performing the covenants aforesaid, shall and may peaceably and quietly have, hold and enjoy the said demised premises for the term aforesaid. AND it is further understood and agreed that the covenants and agreements herein contained are binding on the parties hereto and their legal representatives. IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals this tenth day of December one thousand nine hundred and six. Samuel Deutsch (LS) Isador Deutsch (LS) Morris Weiss (LS) Frank Baratt — Sealed and delivered in the presence of Louis J. Saltzman, Notary Public, Kings County. State of New York, Borough of Brooklyn, County of Kings, ss: On the 10th day of December nineteen hundred and six, before me, personally came Samuel Deutsch, Isidor Deutsch, Morris Weiss, Frank Baratt, to me known, and known to me to be the same person described in and who executed the within lease, and duly acknowledged to me that they severally executed the same. Louis J. Saltzman (LS)

The land affected by this instrument lies in section 10 in block 3109 on the land map of the County of Kings. Recorded May 16, 1907, at 7 min. past 1. A. M. Returned to M. Weiss 393 Bushwick Av., Brooklyn.

McB...
Clerk

THIS INDENTURE, made the twenty seventh day of April in the year nineteen hundred and seven, between RICHARD WILLARD and ^{Katherine} ~~Margaret~~ C. WILLARD, his wife, of Hempstead, Nassau County, New York, parties of the first part, and BULLION REALTY COMPANY, of the City and State of New York, party of the second part. WITNESSETH, That the said parties of the first part, in consideration of the sum of one dollar and other valuable considerations, lawful money of the United States, paid by the party of the second part, do hereby grant and release unto

the said parties of the second part, its successors and assigns forever. ALL that certain lot or parcel of land in the 18th Ward of the Borough of Brooklyn, City of New York, with the buildings and improvements thereon, described as follows: Said parcel of land being shown on a certain map entitled "Map of property situate in the 18th Ward of the City of Brooklyn, belonging to Henry Beadel, made by L. L. Bartlett, City Surveyor, and dated Brooklyn, December 1862", said premises being described as follows, to wit: BEGINNING at a point on the bulkhead line on the west side of Newtown Creek, where the same intersects the southerly line of the land late of John Waters, deceased; running thence westerly along said land late of John Waters, to the centre of Gardner Avenue; thence southerly along the centre of Gardner Avenue to the centre of Lombardy Street; thence westerly along the centre of Lombardy Street and across Stewart Avenue to the centre of Varick Avenue; thence northerly along the centre of Varick Avenue one hundred and thirty (130) feet; thence westerly and parallel with Lombardy Street and along the centre line of the block between Lombardy Street and Anthony Street to the southerly line of land late of Anthony Hulst, deceased, thence again westerly along said land to a point about forty nine (49) feet easterly from the easterly line of Porter Avenue; thence north westerly twenty five (25) feet more or less to the centre line of Old Road; thence south westerly along said centre line of Old Road to the centre line of Porter Avenue; thence southerly along centre line of Porter Avenue to the centre line of Lombardy Street; thence easterly along the centre line of Lombardy Street two hundred and thirty (230) feet; thence southerly parallel with Varick Avenue two hundred and sixty (260) feet to the centre line of Beadel Street; thence easterly along said centre line of Beadel Street one hundred (100) feet; thence southerly parallel with Varick Avenue two hundred and sixty (260) feet to the centre line of Division Street; thence easterly along said centre line of Division Street to the Bulkhead Line of the westerly side of Newtown Creek; and thence north easterly and northerly along said Bulkhead Line to the point or place of beginning. ALSO ALL those certain lots, plots and parcels of land, situated in the 18th Ward of the Borough of Brooklyn, County of Kings, City and State of New York, with the buildings and improvements thereon, conveyed to the said Richard Willard by three deeds recorded in the Registers office of the County of Kings, June 30, 1905, one of which deeds was made by Edith C. Bryce to the said Richard Willard conveying an undivided one half part of all the property owned in common with Sarah A. Hewitt in blocks numbered 2877-2885-2876-2867 and 2875 in section 10 of the land map of Kings County; said deed is recorded in Section 10, Liber 26, p. 302 of Conveyances; also an undivided one half part of all the land owned in common with Sarah A. Hewitt as Executrix and Trustee under the last Will of Peter Cooper in blocks numbered 2884-2875-2868-2860-2869-2878-2887-2896 and 2897 in section 10 of the land map of Kings County. The second of the said three deeds being made by Sarah A. Hewitt, sole surviving executrix and trustee under the last Will of Peter Cooper to the said Richard Willard conveying an undivided one half of all the land owned in common with Edith C. Bryce in blocks numbered 2884-2875-2868-2860-2869-2878-2887-2896 and 2897 in section 10 of the land map of Kings County; said deed is recorded in Section 10, L. 26, p. 303 of Conveyances. The third of which deeds was made by Sarah A. Hewitt to the said Richard Willard conveying an undivided one half part of all the land owned in common with Edith C. Bryce in blocks numbered 2877-2885-2876-2867 and 2875 in section 10 of the land map of Kings County; said deed is recorded in Section 10, Liber 26, page 300 of Conveyances. TOGETHER with and unto the said

and interest of the parties of the first part in and to the land in all the streets and avenues, highways and thoroughfares adjoining, connected with or pertaining to the herein described premises, except so much thereof as has been conveyed to the City of New York for the use of the public as highways. TOGETHER with the appurtenances; and all the estate and rights of the said parties of the first part in and to said premises. TO HAVE AND TO HOLD the above granted premises unto the said party of the second part, its successors and assigns forever.

✓ SUBJECT to mortgages aggregating the sum of one hundred and thirty thousand dollars. AND the said parties of the first part do covenant with the said party of the second part as follows: FIRST. That the said parties of the first part are seized of the said premises in fee simple, and have good right to convey the same. SECOND. That the party of the second part shall quietly enjoy the said premises. THIRD. That the said premises are free from incumbrances, except as aforesaid. FOURTH. That the parties of the first part will execute or procure any further necessary assurance of the title to said premises. FIFTH. That the said parties of the first part will forever warrant the title to said premises. IN WITNESS WHEREOF, the said parties of the first part have hereunto set their hands and seals the day and year first above written. Kathrine G. Willard (LS) Richard Willard (LS) In the presence of John A. Carew. State of New York, County of Kings, ss: On this 2nd day of May in the year nineteen hundred and seven, before me personally came Richard Willard and Kathrine G. Willard, his wife, both of whom are to me known, and known to me to be the individuals described in and who executed the foregoing instrument, and they thereupon severally acknowledged to me that they executed the same. John A. Carew, Notary Public, N. Y. Co., Cert. in Kings Co.

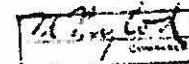
The land affected by this instrument lies in section 10 in blocks 2820, 2823, 2824, 2837, 2838, 2839, 2844, 2845, 2846, 2847, 2848, 2860, 2867, 2868, 2869, 2873, 2876, 2877, 2878, 2884, 2885, 2887, 2896 and 2897 on the land map of the County of Kings. Recorded May 16, 1907, at 54 min. past 11 A. M. Corrected by adding omitted block numbers 2816 and 2893 June 24, 1907, at 1 P. M. G. W. T., Dep. Returned to Wagner & Carew, 26 Court St., Brooklyn.

W. J. Zimmerman

THIS INDENTURE, made the seventh day of February in the year one thousand nine hundred and seven, BETWEEN JAY C. GUGGENHEIMER and IDA R. GUGGENHEIMER, his wife, of the Borough of Manhattan, City, County and State of New York, parties of the first part, and UNITED STATES TITLE GUARANTY AND INDEMNITY COMPANY, a corporation, party of the second part. WITNESSETH, That the said parties of the first part, in consideration of the sum of one dollar and other valuable considerations, lawful money of the United States, paid by the party of the second part, do hereby grant and release unto the said party of the second part, its successors and assigns forever, All that certain lot, piece or parcel of land, with the buildings and improvements thereon erected, situated, lying and being in the Borough of Brooklyn, County of Kings, City and County of New York, bounded and described as follows, to wit:- BEGINNING at the corner of the intersection of the westerly side of Bogart Street with the northerly side of Moore Street; running thence westerly along Moore Street eighty four feet and ten inches; thence northerly and at right angles or nearly so to Moore Street fifty feet; thence easterly

described in, and who executed, the foregoing instrument, and severally acknowledged to me that they executed the same. VINCENT J. BENSI, Notary Public, Kings County No. 136. Register No. 6131. Certif. filed New York County No. 280. Register No. 6207. Queens County No. 657. Commission expires March 30, 1926.

The land affected by this instrument lies in Section 9, Block 2751, on the Land Map of the County of Kings. Recorded Aug. 6, 1924, at 48 mins. past 1 P. M. Returned to VINCENT J. BENSI, 215 Union Ave., Bklyn., N.Y.



115126.

\$3.35.

U.S.I.R.S. \$70.00.

THIS INDENTURE, made the fifth day of August, nineteen hundred and twenty-four, BETWEEN BULLION REALTY COMPANY, a corporation organized under the laws of New York, and having its office at No. 32 Court Street, Brooklyn, New York, party of the first part, and CHARLES PFIZER & COMPANY, INC., a corporation duly organized under the laws of the State of New Jersey, having its office at 81 Maiden Lane, New York City, party of the second part, WITNESSETH: that the party of the first part, in consideration of \$1.00 and other good and valuable considerations, DOLLARS, lawful money of the United States, paid by the party of the second part, does hereby grant and release unto the party of the second part, its successors and assigns forever, ALL that certain piece or parcel of land, situated, lying and being in the 15th Ward of the Borough of Brooklyn, County of Kings, City and State of New York, and contained within Blocks 2816, 2824 and 2823, on the Land Map of the County of Kings, shown on Map of Property belonging to Henry Beadle made by L. L. Bartlett, City Surveyor, and dated December 1862, which is described as follows: BEGINNING at a point on the bulkhead line on the westerly side of Newtown Creek, where the same intersects the land late of John Waters, deceased, which point is about 48 feet, 3 inches, northerly from the southerly line of Anthony Street, is same point be projected to the bulkhead line; running thence westerly along said land late of John Waters, to the centre line of Gardner Avenue, and at a point thereon about 27 feet, 9 inches, south of southerly line of Anthony Street; thence southerly along the centre line of Gardner Avenue, to the centre line of Lombardy Street; thence easterly along the centre line of Lombardy Street, to the bulkhead line of Newtown Creek; and thence northerly along said bulkhead line to the point or place of beginning. TOGETHER with the appurtenances and all the estate and rights of the party of the first part in and to said premises, TO HAVE AND TO HOLD the premises herein granted unto the party of the second part, its successors and assigns forever. AND the party of the first part covenants as follows: FIRST. That the party of the first part is seized of the said premises in fee simple, and has good right to convey the same; SECOND. That the party of the second part shall quietly enjoy the said premises; THIRD. That the said premises are free from incumbrances; FOURTH. That the party of the first part will execute or procure any further necessary assurance of the title to said premises; FIFTH. That the party of the first part will forever warrant the title to the said premises. IN WITNESS WHEREOF the party of the first part has caused its corporate seal to be hereunto affixed and these presents to be signed by its duly authorized officers the day and year first above written. BULLION REALTY COMPANY, by CHAS. D. HANLIN, Secretary & Treasurer. (CORP. SEAL). State of New York County of Kings, SS: ON the fifth day of August, nineteen hundred and twenty-four, before me came GEORGE D. HANLIN, to me known, who, being by me duly sworn, did depose and say that he resides in the Borough of Brooklyn, County of Kings, City and State of New York; that he is

C 4427 6439

the Secretary and Treasurer of HULLION REALTY COMPANY, the corporation described in, and which executed the foregoing instrument, that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the board of Directors of said corporation; and that he signed his name thereto by like order. ANNA I. LAWSON. ANNA I. LAWSON. Commissioner of Deeds, City of New York. Kings County Clerk No. 55. Reg. No. 5055. New York Clerk No. 175. Reg. No. 25078. Commission expires June 12, 1925.

The land affected by this instrument lies in Section 10, Block 2623-2624 and 2616, on the Land Map of the County of Kings. Recorded Aug. 6, 1924, at 4 mins. past 9 A.M. Returned to L. T. & T. CO.

M. H. H. H.
Notary Public

115306.

\$2.29.

U.S.I.R.S. 12.50.

THIS INDENTURE made the first day of August, nineteen hundred and twenty-four, BETWEEN PASQUOMARINO DI GIOVACCHINO & CARMENA DI GIOVACCHINO, his wife, of the Borough of Brooklyn, County of Kings, & State of New York, parties of the first part, and LEONARDA DI MARTINO, wife of SERAFINO DI MARTINO, of the City of Brooklyn County of Kings and State of New York, party of the second part, WITNESSETH, that the parties of the first part, in consideration of ONE DOLLAR and other good and valuable consideration, lawful money of the United States, paid by the party of the second part, do hereby grant and release unto the party of the second part, her heirs and assigns forever, ALL that certain lot, piece or parcel of land, with the building and improvements thereon erected, situate, lying and being in the Borough of Brooklyn, County of Kings, City and State of New York, more particularly bounded and described as follows: BEGINNING at a point on the westerly side of Humboldt Street, seventy-five (75) feet southerly from the southwest corner of Humboldt and Debevoise Streets; thence westerly parallel with Debevoise Street and part of the way through a party wall, one hundred (100) feet; thence southerly parallel with Humboldt Street, twenty-five (25) feet; thence easterly parallel with Debevoise Street and part of the way through another party wall, one hundred (100) feet to the westerly side of Humboldt Street; thence northerly along the westerly side of Humboldt Street, twenty five (25) feet to the point or place of beginning. Being known as and by the street number 13 Humboldt Street. TOGETHER with the appurtenances and all the estate and rights of the parties of the first part in and to said premises. TO HAVE AND TO HOLD the premises herein granted unto the party of the second part, her heirs and assigns forever. SUBJECT to the following incumbrances, now a lien on said premises, to wit: to a first mortgage upon which remains unpaid the sum of SIXTY-FIVE HUNDRED (\$6500.00) DOLLARS and interest, and a purchase money mortgage of EIGHT THOUSAND DOLLARS. AND said parties of the first part covenant as follows: FIRST. That said parties of the first part are seised of the said premises in fee simple, and have good right to convey the same; SECOND. That the party of the second part shall quietly enjoy the said premises; THIRD. That the said premises are free from all incumbrances, except as aforesaid. FOURTH. That the parties of the first part will execute or procure any further necessary assurance of the title to said premises; FIFTH. That said parties of the first part will forever warrant the title to said premises. IN WITNESS WHEREOF the parties of the first part have hereunto set their hands and seals the day and year first above written. PASQUOMARINO DI GIOVACCHINO (L.S.) CARMENA (HER X MARK) DI GIOVACCHINO (L.S.) IN PRESENCE OF: MORRIS PEVETSKY, Notary Public. N.Y. Co. Clks. No. 93. Reg. No. 5055.

CONSULT YOUR LAWYER BEFORE SIGNING THIS INSTRUMENT—THIS INSTRUMENT SHOULD BE USED BY LAWYERS ONLY.

THIS INDENTURE, made the 28th day of August, nineteen hundred and sixty-three
BETWEEN CHAS. PFIZER & CO., INC., a Delaware corporation, having an office at
235 East 42nd Street, New York, New York,
(Formerly designated as Charles Pfizer & Company, Inc., a New Jersey
corporation)

party of the first part, and SCOTT REALTY CO., having an office at 134 Morgan Avenue,
Brooklyn, New York, a co-partnership.

party of the second part,

WITNESSETH, that the party of the first part, in consideration of -----

----- Ten dollars,

lawful money of the United States, and other valuable consideration----- paid

by the party of the second part, does hereby grant and release unto the party of the second part, the heirs or
successors and assigns of the party of the second part forever,

~~ALL the certain lot, piece or parcel of land, situated, lying and being in the~~

~~18th Ward of the Borough of Brooklyn, County of Kings, City and State of New York,~~

All of the following measurements are in the United States Standard of Measurement.
ALL that certain lot, piece or parcel of land, situated, lying and being in the
18th Ward of the Borough of Brooklyn, County of Kings, City and State of New York,
on the Land Map of the County of Kings, shown on Map of Property belonging to
Henry Beadel, made by L. L. Bartlett, City Surveyor and dated December 1862,
which are described as follows:

BEGINNING at a point on the Bulkhead line established by Chapter 428, Laws of
1870 on the westerly side of Newtown Creek, where said Bulkhead line intersects
the land late of John Waters, deceased, which point is 48.29 feet northerly from
the southerly line of Anthony Street, if same street be projected to the Bulkhead
line; running thence westerly along the land of Beadel, 0.52 feet to the Pierhead
and Bulkhead line, approved by the Secretary of War, September 16, 1929; thence
westerly still along the land of Beadel, 190.53 feet to an angle point in said line;
thence westerly still along the land of Beadel, 110.55 feet to an angle point in
said line; thence westerly still along the land of Beadel, 250.78 feet; thence
westerly in a straight line, 45.22 feet to the southerly line of Anthony Street
at a point therein distant, 49.46 feet westerly from the corner formed by the
intersection of the westerly side of Scott Avenue with the southerly side of
Anthony Street, which point is where the southerly line of the land of the Heirs
of John Waters, as shown on Map #586, filed June 10th, 1858, intersects the
southerly side of Anthony Street; thence westerly along the land of Waters,
14.96 feet to its intersection with the land of Beadel; thence westerly along
the land of Beadel, 40.31 feet to an angle point therein; thence westerly still
along the land of Beadel, 17.03 feet; thence southerly, 194.48 feet to the
northerly side of Lombardy Street at a point distant 283 feet easterly from the
corner intersection of the easterly side of Gardner Avenue with the northerly
side of Lombardy Street; thence easterly along the northerly side of Lombardy
Street, to the westerly side of Scott Avenue; thence still easterly along a line
in prolongation of said northerly side of Lombardy Street 60.05 feet more or less,
to the easterly side of Scott Avenue; thence southerly along a line in

prolongation of the easterly side of Scott Avenue 30 feet more or less, to the center line of Lombardy Street; thence easterly along the center line of Lombardy Street to the Bulkhead line of 1870; thence northerly along the Bulkhead line of 1870, 289.43 feet to the point or place of BEGINNING.

TOGETHER WITH all of the right, title and interest, if any, of the Grantor in and to the land lying East of the above described premises to the United States Pierhead and Bulkhead line, approved September 16, 1929.

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TOGETHER with all right, title and interest, if any, of the party of the first part in and to any streets and roads abutting the above described premises to the center lines thereof.

TOGETHER with the appurtenances and all the estate and rights of the party of the first part in and to said premises,

TO HAVE AND TO HOLD the premises herein granted unto the party of the second part, the heirs or successors and assigns of the party of the second part forever.

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AND the party of the first part covenants that the party of the first part has not done or suffered anything whereby the said premises have been incumbered in any way whatever, except as aforesaid.

AND the party of the first part, in compliance with Section 13 of the Lien Law, covenants that the party of the first part will receive the consideration for this conveyance and will hold the right to receive such consideration as a trust fund to be applied first for the purpose of paying the cost of the improvement and will apply the same first to the payment of the cost of the improvement before using any part of the total of the same for any other purpose.

The word "party" shall be construed as if it read "parties" whenever the sense of this indenture so requires.

IN WITNESS WHEREOF, the party of the first part has duly executed this deed the day and year first above written.

IN PRESENCE OF:

ATTEST:

E. W. W. W.
Assistant Secretary

CHAS. PFIZER & CO., INC.

By: *H. A. B.*
Vice-President



STATE OF NEW YORK, COUNTY OF

On the day of 19, before me personally came

to me known to be the individual described in and who executed the foregoing instrument, and acknowledged that executed the same.

STATE OF NEW YORK, COUNTY OF

On the day of 19, before me personally came

to me known to be the individual described in and who executed the foregoing instrument, and acknowledged that executed the same.

9165 PG 492

STATE OF NEW YORK, COUNTY OF NEW YORK

On the 23rd day of AUGUST 1963, before me personally came HERMAN A. PITREAS to me known, who, being by me duly sworn, did depose and say that he resides at No. 8 TWIN BROOKS ROAD SADDLE RIVER, NEW JERSEY that he is the VICE-PRESIDENT of CHAS. PRITZER & CO., INC.

the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the board of directors of said corporation, and that he signed his name thereto by like order.

Arthur J. Stevens
ARTHUR J. STEVENS
Notary Public, State of New York
No. 60-9126-J63
Qualifies in Westchester County
Term Expires March 30, 1964

STATE OF NEW YORK, COUNTY OF

On the day of 19, before me personally came to me known, who, being by me duly sworn, did depose and say that he resides at No.

that he is the of

the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the board of directors of said corporation, and that he signed his name thereto by like order.

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CHAS. PRITZER & CO., INC.

10 2 Blake
Scott: Realty Co.
(a co-partnership)

Bargain and Sale Deed
WITH COVENANT AGAINST GRANTOR'S ACTS

The land affected by the within instrument lies in Section 16 in Block 2823 on the Land Map of the County of Kings 282-4
RECORDED AT REQUEST OF

R/R
Theodore Pollock, Jr.
355 Lexington Ave
New York 17 NY 10017

STANDARD FORM OF
NEW YORK BOARD OF TITLE GUARANTIES
THE TITLE GUARANTEE COMPANY
CHARTERED 1928 IN NEW YORK
Recorded at
The Title Guarantee Company
106 Rensselaer Street, Brooklyn, N. Y.

RESERVE THIS SPACE FOR USE OF RECORDING OFFICE

1963 SEP -5 AM 10.06

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SEP-5-63 161437

OFFICE OF CITY CLERKS
Kings County
RECORDED IN DEEDS
RETURN BY HAND AND OFFICIAL USE

RECEIVED

RETURN RPT # 17393
TAX PAID

THIS INDENTURE, made the 3rd day of January, nineteen hundred and sixty-four

BETWEEN CHAS. PFIZER & CO., INC., a Delaware corporation (successor by
merger to CHAS. ~~AMERICAN PHARMACEUTICALS, INC.~~ PFIZER & COMPANY, INC., a New Jersey corporation
having its principal place of business at 235 East 42nd Street,
New York, New York

party of the first part, and SCOTT REALTY CO., a co-partnership, having an office at 134 Morgan Avenue, Brooklyn, New York

party of the second part,

WTNEBETH, that the party of the first part, in consideration of

ONE (\$1.00) DOLLAR dollars.

lawful money of the United States.

by the party of the second part, does hereby remise, release and quitclaim unto the party of the second part, the heirs or successors and assigns of the party of the second part forever,

ALL that certain plot, piece or parcel of land, with the buildings and improvements thereon erected, situate

lying and being in the 18th Ward of the Borough of Brooklyn, County of Kings, City and State of New York, on the Land Map of the County of Kings, shown on Map of Property belonging to Henry Beadal, made by L. L. Bartlett, City Surveyor and dated December 1862, which are described as follows:-

beginning at a point on the Bulkhead line established by Chapter 428, Laws of 1870 on the westerly side of Newtown Creek, where said Bulkhead line intersects the land late of John Waters, deceased, which point is 48.29 feet northerly from the southerly line of Anthony Street, if same street be projected to the Bulkhead line, running thence westerly along the land of Beadel, 0.52 feet to the Pierhead and Bulkhead line, approved by the Secretary of War, September 16, 1929; thence westerly still along the land of Beadel, 190.53 feet to an angle point in said line; thence westerly still along the land of Beadel, 110.55 feet to an angle point in said line; thence westerly still along the land of Beadel, 250.78 feet; thence westerly in a straight line, 45.22 feet to the southerly line of Anthony Street at a point therein distant 45.04 feet westerly from the corner formed by the intersection of the westerly side of Scott Avenue with the southerly side of Anthony Street, which point is where the southerly line of the land of the Heirs of John Waters, as shown on Map #586, filed June 10th, 1858, intersects the southerly side of Anthony Street; thence westerly along the land of Waters, 14.96 feet to its intersection with the land of Beadel; thence westerly along the land of Beadel, 40.31 feet to an angle point therein; thence westerly still along the land of Beadel, 17.03 feet;

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SOUTH AFRICA

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thence southerly, 194.48 feet to the northerly side of Lombardy Street at a point distant 283 feet easterly from the corner intersection of the easterly side of Gardner Avenue with the northerly side of Lombardy Street;

thence easterly along the northerly side of Lombardy Street, to the westerly side of Scott Avenue;

thence still easterly along a line in prolongation of said northerly side of Lombardy Street, 60.05 feet more or less, to the easterly side of Scott Avenue;

thence southerly along a line in prolongation of the easterly side of Scott Avenue, 30 feet more or less to the center line of Lombardy Street; thence easterly along the center line of Lombardy Street to the Bulkhead line of 1870;

thence Northerly along the Bulkhead line of 1870, 289.43 feet to the point of place of BEGINNING.

All of the foregoing measurements are in the United States Standard of Measurement.

TOGETHER WITH all of the right, title and interest, if any, of the Grantor in and to the land lying East of the above described premises to the United States Pierhead and Bulkhead line, approved September 16, 1929.

This is a correction deed given to correct the description in a certain other deed made by the party of the first part herein to the party of the second part herein dated August 28, 1963 and recorded September 5, 1963 in the Office of the Register of Kings County in Liber 9265 of conveyances at page 489.

The party of the first part is the same corporation as the grantee in the deed recorded on August 6, 1924 in the Office of the Register of Kings County in Liber 4427 op 439 in which the name was erroneously recited to be CHARLES PFIZER & COMPANY, INC.

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TOGETHER with all right, title and interest, if any, of the party of the first part in and to any streets and roads abutting the above described premises to the center lines thereof,

TOGETHER with the appurtenances and all the estate and rights of the party of the first part in and to said premises,

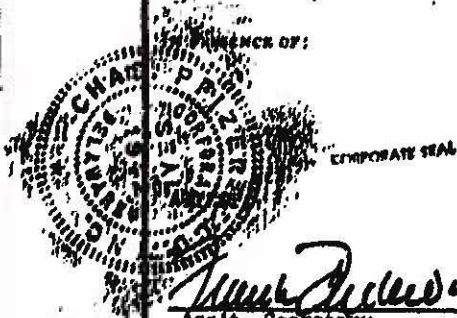
TO HAVE AND TO HOLD the premises herein granted unto the party of the second part, the heirs or successors and assigns of the party of the second part forever.

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AND the party of the first part, in compliance with Section 13 of the Lien Law, hereby covenants that the party of the first part will receive the consideration for this conveyance and will hold the right to receive such consideration as a trust fund to be applied first for the purpose of paying the cost of the improvement and will apply the same first to the payment of the cost of the improvement before using any part of the total of the same for any other purpose.

The word "party" shall be construed as if it read "parties" whenever the sense of this indenture so requires.

IN WITNESS WHEREOF, the party of the first part has duly executed this deed the day and year first above written.



CHAS. PFIZER & CO., INC.

BY W. A. B.
Vice President

Wm. J. [Signature]
Asst. Secretary

STATE OF NEW YORK, COUNTY OF

On the day of 19 before me personally came

to me known to be the individual described in and who executed the foregoing instrument, and acknowledged that executed the same.

STATE OF NEW YORK, COUNTY OF

On the day of 19 before me personally came

to me known to be the individual described in and who executed the foregoing instrument, and acknowledged that executed the same.

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STATE OF NEW YORK, COUNTY OF New York

On the 3rd day of January 1964, before me personally came HERMAN A. PUTER to me known, who, being by me duly sworn, did depose and say that he resides at No. 3 TWIN BROOKS ROAD SADDLE RIVER, NEW JERSEY that he is the VICE-PRESIDENT of CHAS. PYZER & CO., INC.

the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the board of directors of said corporation, and that he signed his name thereto by like order.

STATE OF NEW YORK, COUNTY OF

On the day of 19 before me personally came

the subscribing witness to the foregoing instrument, with whom I am personally acquainted, who, being by me duly sworn, did depose and say that he resides at No.

that he knows

to be the individual described in and who executed the foregoing instrument; that he, said subscribing witness, was present and saw execute the same; and that he, said witness, at the same time subscribed his name as witness thereto.

Arthur J. Stevens
ARTHUR J. STEVENS
Notary Public, State of New York
No. 60-9186000
Qualified in Westchester County
Term Expires March 30, 1964

24

CHAS. PYZER & CO., INC.

D 1466

NOT TAKEN TO

SCOTT HUNTER CO.

2 Bks

Quitclaim Deed

The land affected by the within instrument lies in Section 10 in Block 2083 & 2084 Land Map of the County of Kings

Executed at Request of

Theodore Pollock Esq. 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

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CONSULT YOUR LAWYER BEFORE SIGNING THIS INSTRUMENT—THIS INSTRUMENT SHOULD BE USED BY LAWYERS ONLY.

THIS INDENTURE, made the 16th day of December, nineteen hundred and sixty-four
BETWEEN

SCOTT REALTY CO., a partnership having an address at 134 Morgan Avenue, Brooklyn, New York, whose certificate was filed in the office of the Clerk of Kings County on August 27, 1963.

party of the first part, and

EDITH BLAU, of 239 East 79th Street, New York, New York

party of the second part,

WITNESSETH, that the party of the first part, in consideration of

TEN (\$10.00) dollars,

lawful money of the United States, and other good and valuable consideration

by the party of the second part, does hereby grant and release unto the party of the second part, the heirs or successors and assigns of the party of the second part forever,

ALL that certain plot, piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being in the

18th Ward of the Borough of Brooklyn, County of Kings, City and State of New York, on the Land Map of the County of Kings, shown on Map of Property belonging to Henry Beadel, made by L.L. Bartlett, City Surveyor and dated December 1862, which are described as follows:-

BEGINNING at a point on the Bulkhead line established by Chapter 428, Laws of 1870 on the westerly side of Newton Creek, where said Bulkhead line intersects the land late of John Waters, deceased, which point is 48.29 feet northerly from the southerly line of Anthony Street, if said Street be projected to the Bulkhead line; running

thence westerly along the land of Beadel, 0.52 feet to the Pierhead and Bulkhead line, approved by the Secretary of War, September 16, 1929;

thence westerly still along the land of Beadel, 190.53 feet to an angle point in said line;

thence westerly still along the land of Beadel, 110.55 feet to an angle point in said line;

thence westerly still along the land of Beadel, 142.70 feet to a point in a line parallel with Scott Avenue and distant 47.79 feet easterly therefrom;

3334 426

thence southerly parallel with Scott Avenue, 211.50 feet to the northerly side of Lombardy Street;

thence still southerly and parallel with the prolongation of Scott Avenue, 30 feet, ~~more or less~~, to the center line of Lombardy Street;

thence easterly along the center line of Lombardy Street, to the Bulkhead line of 1870;

thence northerly along said bulkhead line of 1870, 289.43 feet to the int or place of BEGINNING.

All of the foregoing dimensions are in the United States Standard of Measurement.

and where the same are shown as follows:-
The above dimensions are taken from the original survey of the property of the City of St. Louis, and are shown as follows:-
The above dimensions are taken from the original survey of the property of the City of St. Louis, and are shown as follows:-

The above dimensions are taken from the original survey of the property of the City of St. Louis, and are shown as follows:-
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The above dimensions are taken from the original survey of the property of the City of St. Louis, and are shown as follows:-
The above dimensions are taken from the original survey of the property of the City of St. Louis, and are shown as follows:-

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CON 9334 427

TOGETHER with all right, title and interest, if any, of the party of the first part in and to any streets and roads abutting the above described premises to the center lines thereof,

TOGETHER with the appurtenances and all the estate and rights of the party of the first part in and to said premises,

TO HAVE AND TO HOLD the premises herein granted unto the party of the second part, the heirs or successors and assigns of the party of the second part forever.

AND the party of the first part covenants that the party of the first part has not done or suffered anything whereby the said premises have been incumbered in any way whatever, except as aforesaid.

AND the party of the first part, in compliance with Section 13 of the Lien Law, covenants that the party of the first part will receive the consideration for this conveyance and will hold the right to receive such consideration as a trust fund to be applied first for the purpose of paying the cost of the improvement and will apply the same first to the payment of the cost of the improvement before using any part of the total of the same for any other purpose.

The word "party" shall be construed as if it read "parties" whenever the sense of this indenture so requires.

IN WITNESS WHEREOF, the party of the first part has duly executed this deed the day and year first above written.

IN PRESENCE OF:

SCOTT REALTY CO.

BY Frank Carson
General Partner

BY Anthony Carson
General Partner

STATE OF NEW YORK, COUNTY OF NEW YORK

On the 16th day of December 1964, before me personally came Frank Carrano and Anthony Carrano

to me known to be the individual described in and who executed the foregoing instrument and acknowledged that executed the same.

personally known to me to be the members of the firm of SCOTT REALTY CO. and to me known to be the persons described in and who executed the foregoing instrument and they acknowledged that they executed the same as the deed of the said partnership.

ALEXANDER L. DELMONICO
Notary Public, State of New York
No. 41-5972576
Qualified in Queens County
Commission Expires March 30, 1968

[Signature]
Notary Public

STATE OF NEW YORK, COUNTY OF

On the day of 19, before me personally came to me known, who, being by me duly sworn, did depose and say that he resides at No.

that he is the of

the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the board of directors of said corporation, and that he signed his name thereto by like order.

STATE OF NEW YORK, COUNTY OF

9334 428

On the day of 19, before me personally came

to me known to be the individual described in and who executed the foregoing instrument, and acknowledged that executed the same.

STATE OF NEW YORK, COUNTY OF

On the day of 19, before me personally came the subscribing witness to the foregoing instrument, with whom I am personally acquainted, who, being by me duly sworn, did depose and say that he resides at No.

that he knows

to be the individual described in and who executed the foregoing instrument; that he, said subscribing witness, was present and saw execute the same; and that he, said witness, at the same time subscribed his name as witness thereto.

①
TITLE No. 1464868
SCOTT REALTY CO.
D 28851
TO
EDITH ELAU
FOR RECORDING

Bargain and Sale Deed
WITH COVENANT AGAINST GRANTOR'S ACTS

The land affected by the within instrument is in Block 10 in Block 2824 on the map of the County of Kings.
Recorded at Request of Lot 4-1

Theodore Pollock Esq.
355 Lexington Avenue
New York 17, New York
Loc. Ver.

STANDARD FORM OF
NEW YORK BOARD OF TITLE UNDERWRITERS
Distributed by
THE TITLE GUARANTEE
COMPANY
CHARTERED 1920
The Title
Company, Brooklyn, N.Y.

RESERVE THIS SPACE FOR USE OF RECORDING OFFICE

1964 DEC 21 AM 11:07

22 50 6 22 40-12-430

OFFICE OF CLERK
Kings County
RECORDED AT REQUEST
OF THEO. POLLOCK
CLERK REC'D

25489

RETURN RPT #

THIS INDENTURE, made the 16th day of DECEMBER, nineteen hundred and SIXTY-FOUR
BETWEEN
EDITH BLAU, *Residing at* 239 EAST 79TH STREET, NEW YORK, NEW YORK

party of the first part, and

SCOTT REALTY CO., A PARTNERSHIP HAVING AN ADDRESS AT 134 MORGAN AVENUE,
BROOKLYN, NEW YORK, WHOSE CERTIFICATE WAS FILED IN THE OFFICE OF THE
CLERK OF KINGS COUNTY ON AUGUST 27, 1963.

party of the second part,

WITNESSETH, that the party of the first part, in consideration of

TEN (10) dollars,

lawful money of the United States, AND OTHER GOOD AND VALUABLE CONSIDERATIONS paid

by the party of the second part, does hereby grant and release unto the party of the second part, the heirs or
successors and assigns of the party of the second part forever,

ALL that certain plot, piece or parcel of land, with the buildings and improvements thereon erected, situate,
lying and being in the

18TH WARD OF THE BOROUGH OF BROOKLYN, COUNTY OF KINGS, CITY AND STATE

OF NEW YORK, ON THE LAND MAP OF THE COUNTY OF KINGS, SHOWN ON MAP OF

PROPERTY BELONGING TO HENRY BEADEL, MADE BY L.L. BARTLETT, CITY SURVEYOR

AND DATED DECEMBER 1862, WHICH ARE DESCRIBED AS FOLLOWS:-

FIRST OF THEM:

BEGINNING AT A POINT ON THE BULKHEAD LINE ESTABLISHED BY CHAPTER 428,
LANDS OF 1870 ON THE WESTERLY SIDE OF NEWTON CREEK, WHERE SAID BULKHEAD

LINE INTERSECTS THE LAND LATE OF JOHN WATERS, DECEASED, WHICH POINT IS

48.29 FEET NORTHERLY FROM THE SOUTHERLY LINE OF ANTHONY STREET, IF SAID

STREET BE PROJECTED TO THE BULKHEAD LINE, RUNNING

SECOND OF THEM:

THENCE WESTERLY ALONG THE LAND OF BEADEL, 0.52 FEET TO THE PIERHEAD AND
BULKHEAD LINE, APPROVED BY THE SECRETARY OF WAR, SEPTEMBER 16, 1829;

THENCE WESTERLY STILL ALONG THE LAND OF BEADEL, 190.53 FEET TO AN ANGLE

POINT IN SAID LINE;

THIRD OF THEM:

THENCE WESTERLY ALONG THE PIERHEAD AND BULKHEAD LINE TO THE PIERHEAD

21 JUN 1964

CON 9334 420

THENCE WESTERLY STILL ALONG THE LAND OF BEADEL, 110.55 FEET TO AN ANGLE
POINT IN SAID LINE;

THENCE WESTERLY STILL ALONG THE LAND OF BEADEL, 142.70 FEET TO A POINT IN
A LINE PARALLEL WITH SCOTT AVENUE AND DISTANT 47.79 FEET EASTERLY THEREFROM;

THENCE SOUTHERLY PARALLEL WITH SCOTT AVENUE, 211.50 FEET TO THE NORTHERLY
SIDE OF LOMBARDY STREET;

THENCE STILL SOUTHERLY AND PARALLEL WITH THE PROLONGATION OF SCOTT AVENUE,
30 FEET, ~~WESTERLY~~ ^{WESTERLY} TO THE CENTER LINE OF LOMBARDY STREET;

THENCE EASTERLY ALONG THE CENTER LINE OF LOMBARDY STREET TO THE BULKHEAD
LINE OF 1870;

THENCE NORTHERLY ALONG SAID BULKHEAD LINE OF 1870, 289.43 FEET TO THE
POINT OF PLACE OF BEGINNING.

ALL OF THE FOREGOING DIMENSIONS ARE IN THE UNITED STATES STANDARD OF MEASUREMENT,

SUBJECT TO THE FIRST MORTGAGE IN THE FACE AMOUNT OF \$325,000.00, DATED
DECEMBER 16, 1964, HELD BY THE SEAMAN'S BANK FOR SAVINGS IN THE CITY OF
NEW YORK.

(2)

TOGETHER with all right, title and interest, if any, of the party of the first part in and to any streets and roads abutting the above described premises to the center lines thereof,

TOGETHER with the appurtenances and all the estate and rights of the party of the first part in and to said premises,

TO HAVE AND TO HOLD the premises herein granted unto the party of the second part, the heirs or successors and assigns of the party of the second part forever.

AND the party of the first part covenants that the party of the first part has not done or suffered anything whereby the said premises have been incumbered in any way whatever, except as aforesaid.

AND the party of the first part, in compliance with Section 13 of the Lien Law, covenants that the party of the first part will receive the consideration for this conveyance and will hold the right to receive such consideration as a trust fund to be applied first for the purpose of paying the cost of the improvement and will apply the same first to the payment of the cost of the improvement before using any part of the total of the same for any other purpose.

The word "party" shall be construed as if it read "parties" whenever the sense of this indenture so requires.

IN WITNESS WHEREOF, the party of the first part has duly executed this deed the day and year first above written.

IN PRESENCE OF:

Edith Blau
EDITH BLAU

STATE OF NEW YORK, COUNTY OF NEW YORK

On the 16 day of DECEMBER 1964, before me personally came
EDITH BLAU

to me known to be the individual described in and who executed the foregoing instrument, and acknowledged that executed the same.

Alexander L. Delmonico
NOTARY PUBLIC

ALEXANDER L. DELMONICO
Notary Public, State of New York
No. 41-5972576
Qualified in Queens County
Commission Expires March 30, 1968

STATE OF NEW YORK, COUNTY OF

On the day of 19 before me personally came to me known, who, being by me duly sworn, did depose and say that he resides at No.

that he is the of

the corporation described in and which executed the foregoing instrument; that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the board of directors of said corporation, and that he signed his name thereto by like order.

STATE OF NEW YORK, COUNTY OF

On the day of 19 before me personally came

to me known to be the individual described in and who executed the foregoing instrument, and acknowledged that executed the same.

STATE OF NEW YORK, COUNTY OF

On the day of 19 before me personally came the subscribing witness to the foregoing instrument, with whom I am personally acquainted, who, being by me duly sworn, did depose and say that he resides at No.

that he knows

to be the individual described in and who executed the foregoing instrument; that he, said subscribing witness, was present and saw execute the same; and that he, said witness, at the same time subscribed his name as witness thereto.

TITLE No. 1464868

D 28849

EDITH BLAU

NOT SUBMITTED TO

TO

SCOTT REALTY CO.

Bargain and Sale Deed

WITH COVENANT AGAINST GRANTOR'S ACTS

The land affected by the within instrument is located in Section 10 in Block 2824 on the map of the County of Kings

Recorded at Request of Lot 19-1

THEODORE POLLOCK ESQ.
355 LEXINGTON AVENUE
NEW YORK 17, NEW YORK

PAPER RECORDED
IN BLOCK
AT REQUEST OF
THEO. POLLOCK

STANDARD FORM OF
NEW YORK BOARD OF TITLE UNDERWRITERS

Dispersed by

THE TITLE GUARANTEE COMPANY

CHARTERED 1900 IN NEW YORK

The Title Guarantee Company
100 Nassau Street, New York 1, N.Y.

RESERVE THIS SPACE FOR USE OF RECORDING OFFICE

1964 DEC 21 AM 11:07

REC-2126 225004 4912-038

OFFICE OF CITY REGISTER

Kings County

RECORDED IN BOOKS

Witness my hand and official seal

Kenneth O'Connell
CITY REGISTER

25487

RETURN FILE

CONSULT YOUR LAWYER BEFORE SIGNING THIS INSTRUMENT--THIS INSTRUMENT SHOULD BE USED BY LAWYERS ONLY.

REL 1577 Page 244

THIS INDENTURE, made the 15th day of November, nineteen hundred and eighty-four
BETWEEN SCOTT REALTY CO., a New York co-partnership having its principal
office at 25 South Service Road, Jericho, New York 11753,

party of the first part, and MOPCAN REALTY COMPANY, a New York co-partnership,
having its principal office at 25 South Service Road, Jericho, New York 11753, of
Marie E. Carillo (50% ownership), 151 Jericho Turnpike, Old Westbury, New York 11768, and
Carolyn Cattano (50% ownership), 4587 Northwest 3rd Drive, Delray Beach, Florida 33444,
as tenants-in-common,

party of the second part,

WITNESSETH, that the party of the first part, in consideration of ten dollars and other valuable consideration
paid by the party of the second part, does hereby grant and release unto the party of the second part, the heirs
or successors and assigns of the party of the second part forever,

ALL that certain plot, piece or parcel of land, with the buildings and improvements thereon erected, situate,
lying and being in the

as set forth in Certificate "A" attached hereto,

TOGETHER with all right, title and interest, if any, of the party of the first part in and to any streets and
roads abutting the above described premises in the center lines thereof; TOGETHER with the appurtenances
and all the estate and rights of the party of the first part in and to said premises; TO HAVE AND TO
HOLD the premises herein granted unto the party of the second part, the heirs or successors and assigns of
the party of the second part forever.

AND the party of the first part covenants that the party of the first part has not done or suffered anything
whereby the said premises have been encumbered in any way whatever, except as aforesaid.

AND the party of the first part, in compliance with Section 13 of the Lien Law, covenants that the party of
the first part will receive the consideration for this conveyance and will hold the right to receive such consid-
eration as a trust fund to be applied first for the purpose of paying the cost of the improvement and will apply
the same first to the payment of the cost of the improvement before using any part of the total of the same for
any other purpose.

The word "party" shall be construed as if it read "parties" whenever the sense of this indenture so requires.
IN WITNESS WHEREOF, the party of the first part has duly executed this deed the day and year first above
written.

In presence of:

SCOTT REALTY CO.

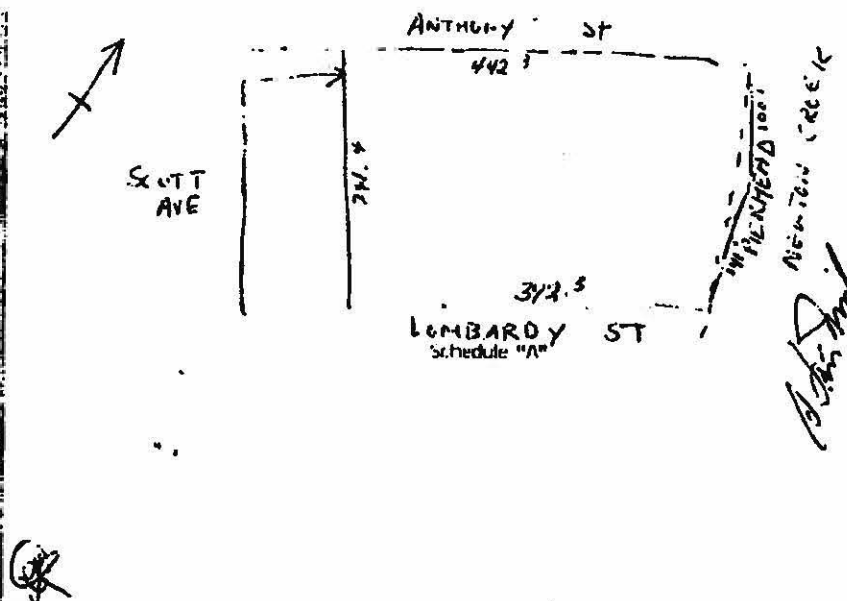
By Frank Carillo
Frank Carillo, individually and
as co-partner

By Carolyn Cattano
Carolyn Cattano, individually
and as co-partner

ALL that certain plot, piece or parcel of land with the buildings and improvements thereon erected, situate, lying and being in the 18th Ward of the Borough of Brooklyn, County of Kings, City and State of New York, shown on the Land Map of the County of Kings, and on a Map of Property belonging to Henry Beadel, made by L. Bartlett, City Surveyor, dated December 1962, and described as follows:

BEGINNING at a point on the Bulkhead line established by Chapter 428, Laws of 1870 on the westerly side of Newtown Creek, where said Bulkhead line intersects the land late of John Waters, deceased, which point is 48.29 feet northerly from the southerly line of Anthony Street, if same street be projected to the Bulkhead line; thence thence westerly along the land of Beadel, 0.52 feet to the Pierhead and Bulkhead line, approved by the Secretary of War, September 16, 1929; thence westerly still along the land of Beadel, 190.53 feet to an angle point in said line; thence westerly still along the land of Beadel, 110.55 feet to an angle point in said line; thence westerly still along the land of Beadel, 250.78 feet; thence westerly in a straight line, 45.22 feet to the southerly line of Anthony Street at a point therein distant, 49.46 feet westerly from the corner formed by the intersection of the westerly side of Scott Avenue with the southerly side of Anthony Street, which point is where the southerly line of the land of the Heirs of John Waters, as shown on Map #586, filed January 11, 1858, intersects the southerly side of Anthony Street; thence westerly along the land of Waters, 14.96 feet to its intersection with the land of Beadel; thence westerly along the land of Beadel, 40.31 feet to an angle point therein; thence westerly still along the land of Beadel, 17.03 feet; thence southerly, 194.48 feet to the northerly side of Lombardy Street at a point distant 283 feet easterly from the corner intersection of the easterly side of Gardner Avenue with the northerly side of Lombardy Street; thence easterly along the northerly side of Lombardy Street, to the westerly side of Scott Avenue; thence still easterly along a line in prolongation of the said northerly side of Lombardy Street 60.05 feet more or less, to the easterly side of Scott Avenue; thence southerly along a line in prolongation of the easterly side of Scott Avenue 30 feet more or less, to the center line of Lombardy Street; thence easterly along the center line of Lombardy Street to the Bulkhead line of 1870; thence northerly along the Bulkhead line of 1870, 289.43 feet to the point or place of BEGINNING.

TOGETHER with all of the right, title and interest, if any, of the Grantor-Seller in and to the land lying East of the above described premises to the United States Pierhead and Bulkhead line approved September 16, 1929.



STATE OF NEW YORK, COUNTY OF NASSAU

On the 14 day of November 1934, before me personally came FRANK CARRANO and ANTHONY CARRANO

to me known to be the individual described in and who executed the foregoing instrument, and acknowledged that they executed the same

1577 246

STATE OF NEW YORK, COUNTY OF NASSAU

On the 14 day of November 1934, before me personally came FRANK CARRANO and ANTHONY CARRANO, to me known and known to me to be the co-partners of SCOTTY AIR LINES, Inc. described in and who executed the foregoing instrument, and acknowledged that they executed the same for and in behalf of said co-partnership.

STATE OF NEW YORK, COUNTY OF

On the 19 day of November 1934, before me personally came to me known, who, being by me duly sworn, did depose and say that he resides at No

that he is the of

the corporation described in and which executed the foregoing instrument, that he knows the seal of said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the board of directors of said corporation, and that he signed his name thereto by like order

STATE OF NEW YORK, COUNTY OF

On the 19 day of November 1934, before me personally came the subscribing witness to the foregoing instrument, with whom I am personally acquainted, who, being by me duly sworn, did depose and say that he resides at No

that he knows

to be the individual described in and who executed the foregoing instrument, that he, said subscribing witness, was present and saw execute the same; and that he, said witness, at the same time subscribed his name as witness thereto.

Morgan and White Book

With COVENANT AGAINST GRADIENTS AND

Title No

SECRETARY OF THE

TO

MORGAN WHITE COMPANY

SECTION 2

BOOK 2624

PAGE 10

COUNTY IN-TOWN KINGS

RETURN BY MAIL TO

STANDARD FORM OF NEW YORK BOARD OF TITLE UNDERWRITERS
Published by
SECURITY TITLE AND GUARANTY COMPANY

CHARTERED 1920 ST IN NEW YORK

S. LOUIS MIREL, ESQ.
P.O. BOX 600, 120 BROADWAY
LYNBROOK, NEW YORK 11563

Ex No

RESERVE THIS SPACE FOR USE OF RECORDING OFFICE

RECEIVED
NOV 20 1934
TRANSFER TAX
KINGS
COUNTY

9-13-
1440-
18986

OFFICE OF CITY REGISTER

KINGS COUNTY

RECORDED

EXEMPTED BY LAW

AND OFFICIAL FILE

paye C. Campbell
CITY REGISTER

CONSULT YOUR LAWYER BEFORE SIGNING THIS INSTRUMENT—THIS INSTRUMENT SHOULD BE USED BY LAWYERS ONLY.

REEL 2703 PG 2306

THIS INDENTURE, made the 3 day of May, nineteen hundred and ninety-one
BETWEEN
FMC COMPANY, a New York general partnership with offices c/o FRED CARILLO,
25 South Service Road, Jericho, New York 11753, and
MORGAN REALTY COMPANY, a New York general partnership with offices c/o FRED CARILLO,
25 South Service Road, Jericho, New York 11753,
MARIE CARILLO and CAROLYN CARRANO also with offices c/o FRED CARILLO,
25 South Service Road, Jericho, New York 11753
party of the first part, and
PRESTON TRUCKING COMPANY, INC., 151 Easton Boulevard, Preston, Maryland

party of the second part,

WITNESSETH, that the party of the first part, in consideration of ten dollars and other valuable consideration paid by the party of the second part, does hereby grant and release unto the party of the second part, the heirs or successors and assigns of the party of the second part forever,

ALL that certain plot, piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being in the Borough of Brooklyn, County of Kings, City and State of New York more particularly described on Schedule A annexed.

AND WITNESSETH, that the party of the first part, in consideration of ten dollars and other valuable consideration paid by the party of the second part, does hereby remise, release and quitclaim unto the party of the second part, the heirs successor and assigns of the party of the second part forever,

ALL that certain plot, piece or parcel of land, with the buildings and improvements thereon lying and being in the Borough of Brooklyn, County of Kings, City and State of New York more particularly described on Schedule B annexed

cc
Together with the benefits and subject to the burdens contained in that certain Declaration of Mutual Driveway Easement made by FMC Company, Morgan Realty Company, Marie Carillo and Carolyn Carrano dated May 3, 1991 and being recorded immediately prior hereto.

TOGETHER with all right, title and interest, if any, of the party of the first part in and to any streets and roads abutting the above-described premises to the center lines thereof; TOGETHER with the appurtenances and all the estate and rights of the party of the first part in and to said premises: TO HAVE AND TO HOLD the premises herein granted unto the party of the second part, the heirs or successors and assigns of the party of the second part forever.

AND the party of the first part covenants that the party of the first part has not done or suffered anything whereby the said premises have been encumbered in any way whatever, except as aforesaid.

AND the party of the first part, in compliance with Section 13 of the Lien Law, covenants that the party of the first part will receive the consideration for this conveyance and will hold the right to receive such consideration as a trust fund to be applied first for the purpose of paying the cost of the improvement and will apply the same first to the payment of the cost of the improvement before using any part of the total of the same for any other purpose.

The word "party" shall be construed as if it read "parties" whenever the sense of this indenture so requires.

IN WITNESS WHEREOF, the party of the first part has duly executed this deed the day and year first above written.

IN PRESENCE OF:

FMC COMPANY

Marie Carillo
General Partner

Marie Carillo
MARIE CARILLO, individually and as a co-partner of MORGAN REALTY COMPANY

Carolyn Carrano
CAROLYN CARRANO, individually and as a co-partner of MORGAN REALTY COMPANY

STATE OF NEW YORK, COUNTY OF New York

On the 3rd day of May, 1991, before me personally came Carillo, to me known to be the individual who executed the foregoing instrument and, who, being duly sworn by me, did depose and say that he is a member of the firm of FMC COMPANY, a co-partnership, and that he executed the foregoing instrument in the firm name of FMC COMPANY, and that he had authority to sign the same, and acknowledged that he executed the same as the act and deed of said firm.

Notary Public, State of New York
No. 4748063
Qualified in Nassau County
Commission Expires January 31, 1992

Peter Alpert
Notary Public

STATE OF NEW YORK, COUNTY OF New York

On the 3rd day of May, 1991, before me personally came MARIE, to me known to be the individual who executed the foregoing instrument and, who, being duly sworn by me, did depose and say that he is a member of the firm of MORGAN REALTY COMPANY, a co-partnership, and that he executed the foregoing instrument in the firm name of MORGAN REALTY COMPANY and that he had authority to sign the same, and acknowledged that he executed the same as the act and deed of said firm.

PETER ALPERT
Notary Public, State of New York
No. 4748063
Qualified in Nassau County
Commission Expires January 31, 1992

Peter Alpert
Notary Public

STATE OF NEW YORK, COUNTY OF New York

On the 3rd day of May, 1991, before me personally came Carolyn, to me known to be the individual who executed the foregoing instrument and, who, being duly sworn by me, did depose and say that he is a member of the firm of MORGAN REALTY COMPANY, a co-partnership, and that he executed the foregoing instrument in the firm name of MORGAN REALTY COMPANY and that he had authority to sign the same, and acknowledged that he executed the same as the act and deed of said firm.

PETER ALPERT
Notary Public, State of New York
No. 4748063
Qualified in Nassau County
Commission Expires January 31, 1992

Peter Alpert
Notary Public

STATE OF NEW YORK, COUNTY OF New York

On the 3rd day of May, 1991, before me personally came MARIE CARILLO, to me known to be the individual described in and who executed the foregoing instrument, and acknowledged she executed the same.

PETER ALPERT
Notary Public, State of New York
No. 4748063
Qualified in Nassau County
Commission Expires January 31, 1992

Peter Alpert
Notary Public

STATE OF NEW YORK, COUNTY OF New York

On the 3rd day of May, 1991, before me personally came CAROLYN CARRANO, to me known to be the individual described in and who executed the foregoing instrument, and acknowledged she executed the same.

Peter Alpert
Notary Public

SCHEDULE A

2703 2307

ALL that certain plot, piece or parcel of land, situate, lying and being in the Borough, County of Kings, City and State of New York, bounded and described as follows;

BEGINNING at the intersection of the easterly line of Scott Avenue as shown on the Final Map of the City of New York, Borough of Brooklyn with the northerly line of Lombardy Street, as shown on said map, and

RUNNING THENCE Southerly along the prolongation of said easterly line of Scott Avenue, 30 feet $\frac{1}{4}$ inch to the center line of Lombardy Street, as shown on said map;

THENCE Easterly along said center line of Lombardy Street, 54 feet $9\frac{1}{2}$ inches to a point;

THENCE Northerly at right angles to the preceding course, 230 feet $2\frac{1}{8}$ inches to the southerly side of Anthony Street as shown on said map;

THENCE Easterly along the southerly side of Anthony Street, as shown on said map, 435 feet $2\frac{1}{2}$ inches to the U.S. Pierhead and Bulkhead Line along the westerly side of Newtown Creek;

THENCE Northerly at right angles to the preceding course and along said Pierhead and Bulkhead Line, 60 feet $\frac{1}{2}$ inch;

THENCE still northerly along said Pierhead and Bulkhead line, at an interior angle 168 degrees 41 minutes 34 seconds to the preceding course, 253 feet $4\frac{3}{8}$ inches;

THENCE still northerly along said Pierhead and Bulkhead line, at an interior angle of 175 degrees 24 minutes 23 seconds to the preceding course, 27 feet 10 inches;

THENCE Westerly and parallel to the northerly side of Cherry Street as shown on said map, 432 feet $8\frac{3}{4}$ inches to the easterly side of Scott ~~Street~~ ^{Ave} as shown on the above map;

THENCE Southerly along the easterly side of Scott ~~Street~~ ^{Ave}, as shown on the above map, 15 feet $\frac{1}{8}$ inch;

THENCE Westerly at right angles to the preceding course, 30 feet $\frac{1}{4}$ inch to the center line of Scott Avenue, as shown on the above map;

THENCE Southerly along said center line of Scott Avenue, 30 feet $\frac{1}{4}$ inch to the center line of Cherry Street, both as shown on the above map;

THENCE Easterly along said center line of Cherry Street 30 feet $\frac{1}{4}$ inch to the Easterly side of Scott Avenue as shown on the above map;

THENCE Southerly at right angles to the preceding course, 241 feet $3\frac{3}{8}$ inches;

(continued)

SCHEDULE A CONT

2703 PC 2308

THENCE Westerly along a line forming an interior angle of 94 degrees 35 minutes 17 seconds with the preceding course, 461 feet 10-3/8 inches to the westerly side of Gardner Avenue, as shown on the above map;

THENCE Southerly along the easterly side of Gardner Avenue, as shown on the above map, 40 feet 3/8 inch;

THENCE Easterly on a line forming an interior angle of 85 degrees 26 minutes 25 seconds with the preceding course, 278 feet 1-3/8 inches;

THENCE still easterly on a line forming an interior angle of 182 degrees 20 minutes 00 seconds with the preceding course, 23 feet 1/2 inch;

THENCE still easterly on a line forming an interior angle of 176 degrees 56 minutes 49 seconds with the preceding course, 40 feet 3-3/4 inches;

THENCE still easterly on a line forming an interior angle of ¹⁸⁰ ~~176~~ degrees 12 minutes 17 seconds with the preceding course, 14 feet 11-1/2 inches;

THENCE still easterly on a line forming an interior angle of 179 degrees 57 minutes 45 seconds with the preceding course, ⁴⁵ ~~28~~ feet 2-5/8 inches;

THENCE still easterly on a line forming an interior angle of 181 degrees 13 minutes 20 seconds with the preceding course, 30 feet 1-1/8 inches to the center line of Scott Avenue, as shown on the above map; and

THENCE Southerly along said center line of Scott Avenue, as shown on the above map, 206 feet 2-7/8 inches to a point;

THENCE Easterly along the prolongation of the northerly side of Lombardy Street, 30 feet 1/4 inch, to the point or place of BEGINNING.

(continued)

SEE SCHEDULE B

2703 PG 2309

ALL that certain plot, piece or parcel of land, situate, lying and being in the Borough of Brooklyn, County of Kings, City and State of New York, bounded and described as follows:

BEGINNING at the intersection of the Easterly line of Scott Avenue as shown on the Final Map of the City of New York, Borough of Brooklyn with the Northerly line of Lombardy Street, as shown on said map, and

RUNNING THENCE Southerly along the prolongation of said easterly line of Scott Avenue, 30 feet 1/4 inch to the center line of Lombardy Street, as shown on said map;

THENCE Westerly along said center line of Lombardy Street, 30 feet 1/4 inch to the prolongation of the center line of Scott Avenue as shown on said map;

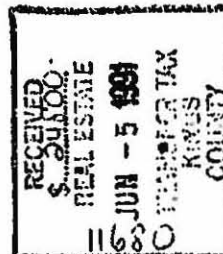
THENCE Northerly along said prolongation of Scott Avenue, 30 feet 1/4 inch to the prolongation of the northerly side of Lombardy Street, as shown on said map;

THENCE Easterly along said prolongation of the northerly side of Lombardy Street, 30 feet 1/4 inch to the point or place of BEGINNING.

REL 2703-2310

0074 PAID 06-05-90
33321 GRAFT B-01

003320 PAID 06-05-90
33320 DEED B-01



REC. FEE	A - 33
SET	\$ 26.00
RPT	\$ 391 (5-10-91)

RECORDED IN KINGS COUNTY



OFFICE OF THE CITY REGISTRAR

91 JUN - 5 PM 1:26

WITHE
AND OFFICIAL SEAL
John D. Alpert
CITY REGISTRAR

21298

PETER ALPERT
Notary Public, State of New York
No. 4746063
Qualified in Nassau County
Commission Expires January 31, 1992

John Alpert
Notary Public

BARGAIN AND SALE DEED
WITH COVENANTS AGAINST GRANTOR'S ACTS
TITLE NO. K-1028461

FMC COMPANY and
MORGAN REALTY CO.

TO
PRESTON TRUCKING COMPANY, INC.



2815 Lot 1
2816 Lot 1
2824 Lot 1
2824 P/O 10

Borough of Brooklyn
County of Kings

Scott Avenue & Anthony Ave.

RETURN BY MAIL TO:

JOHN WHITE, ESQ.
PIPER & MARBURY
117 Bay Street
Easton, Maryland 21601-2703

(2)
Record at the Request of
Security Title and Guaranty Company
Two Park Avenue
New York, New York 10016

**RESPONSE OF PFIZER INC.
TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S
REQUEST FOR INFORMATION, DATED OCTOBER 25, 2011 – NEWTOWN CREEK
SUPERFUND SITE, KINGS COUNTY AND QUEENS COUNTY, NEW YORK**

EXHIBIT 3

FORM A: GENERAL FACILITY INFORMATION

Company Name: Pfizer Inc.

Facility Name: Brooklyn Plant

Address: 11 Bartlett Street
No. Street

Brooklyn N.Y. 11206
City State Zip Code

Name of Person Completing Form: _____

Position: _____

Phone Number: () _____

1. Year Facility Opened Eighteen Hundred & Forty Nine..... 19 (10-11)

2. Primary SIC Code 2834 (Pharm Process) 2869 (Ind. Organic Chem.)..... (12-15)

3. Estimate the total amounts of process wastes (excluding wastes sold for use) generated by this facility during 1978:

thousand gallons (16-24)

hundred tons (25-32)

thousand cubic yards (33-41)

4. Estimate (in whole percents) how these process wastes generated in 1978 were disposed of:

in landfill ... Solids (42-44)

in pit/pond/lagoon ..X..... (45-47)

in deep wellX..... (48-50)

incinerated ..Liquid (Solvents)..... (51-53)

reprocessed/recycled ...X..... (54-56)

evaporatedX..... (57-59)

unknown (60-62)

other (Specify _____) (63-65)

5. What is the total number of known sites (including disposal on the property where this facility is located as one site) that have been used for the disposal of process wastes from this facility since 1950?..... (66-68)

COMPLETE ONE FORM "B" FOR EACH OF THE SITES

6. Have any of the process wastes generated at this facility been hauled (removed) from this facility for disposal? (Yes=1; no=2) (69)

IF YES, COMPLETE FORM "C"

7. Do you know the disposal site locations of all of the process waste hauled from your facility since 1950? (Yes=1; no=2) (70)

IF NO, COMPLETE ONE FORM "D" FOR EACH FIRM OR CONTRACTOR WHO TOOK WASTE TO AN UNKNOWN LOCATION

8. Specify the earliest year represented by information from company or facility records supplied on this and other forms19 (71-72)

9. Specify the earliest year represented by information from employee knowledge supplied on this and other forms19 (73-74)

COMPLETE THIS FORM FOR EVERY SITE (INCLUDING THE LOCATION OF THIS FACILITY AS ONE SITE) USED FOR THE DISPOSAL OF PROCESS WASTES GENERATED BY THIS FACILITY SINCE 1950.

Company Name: Pfizer Inc.
 Facility Name: Brooklyn Plant
 Name of Site: Lombardy St. Foot of Newtown Creek, Landfill Area
 Address of Site: Lombardy St.

no. street
Brooklyn N.Y.
 city state zip code

Name of Owner (while used by facility): Pfizer Inc.
 Address: 11 Bartlett St.

no. street
Brooklyn N.Y. 11206
 city state zip code

Current Owner (if different from above): Jones Trucking Co.
 Address: Foot of Lombardy St.

no. street
Brooklyn N.Y.
 city state zip code

- Location (1= the property on which facility is located; 2= off-site)..... 2 (10)
- Ownership at time of use (1= company ownership; 2=private but not company ownership) 3=public ownership) 1 (11)
- Current status (1= closed; 2= still in use; 9=don't know) 1 (12)
 IF CLOSED, specify year closed 1964 (13-14)
- Year first used for process waste from this facility 1924 (15-16)
- Year last used for process waste from this facility (enter "79" if still in use) 1964 (17-18)
- Total amount of process waste from this facility disposed at site:
 thousand gallons 11111111 (19-26)
 hundred tons 11111111 (27-33)
 thousand cubic yards 11111111 (34-41)
- Specify type(s) of disposal method(s) used at site and whether method is still in use (1=currently in use; 2=no longer in use; 3=never used; 9=don't know)
 landfill, mono industrial waste 3 (42)
 landfill, mixed industrial waste 2 (43)
 landfill, drummed waste 3 (44)
 landfill, municipal refuse co-disposed ... 3 (45)
 pits/ponds/lagoons 3 (46)
 deep well injection 3 (47)
 land farming 3 (48)
 incineration 3 (49)
 treatment (eg. neutralizing)..... 3 (50)
 reprocessing/recycling 3 (51)
 other (specify) Burning Packaging etc. 2 (52)
- Users of this site (1=this facility; 2=this facility and other company facilities only; 3=this company and others; 9=don't know) 1 (53)

LIST NAMES AND ADDRESSES OF OTHER KNOWN USERS BELOW

NONE

Company Name: Pfizer Inc.Facility Name: Brooklyn PlantSite Name: Lombardy Street Landfill

9. Components (or characteristics) of process waste from this facility disposed at site: (1=present in waste; 2=not present in waste; 9=don't know)

FILL IN EVERY BLOCK SPACE

Acid solutions, with pH<3.....	2	(10)
pickling liquor	2	(11)
metal plating waste	2	(12)
circuit etchings	2	(13)
inorganic acid manufacture	2	(14)
organic acid manufacture	2	(15)
Base solutions, with pH>10	2	(16)
caustic soda manufacture	2	(17)
nylon and similar polymer generation	2	(18)
scrubber residual	2	(19)
Heavy metals & trace metals (bonded organically & inorganically)	2	(20)
arsenic, selenium, antimony	2	(21)
mercury	2	(22)
iron, manganese, magnesium	2	(23)
zinc, cadmium, copper, chromium (trivalent)	2	(24)
chromium (hexavalent)	2	(25)
lead	2	(26)
Radioactive residues, >3 pico curies/liter	2	(27)
uranium residuals & residuals for UF ₆ recycling	2	(28)
lathanide series elements and rare earth salts	2	(29)
phosphate slag	2	(30)
thorium	2	(31)
radium	2	(32)
other alpha, beta & gamma emitters	2	(33)
Organics.....	2	(34)
pesticides & intermediates	2	(35)
herbicides & intermediates	2	(36)
fungicides & intermediates	2	(37)
rodenticides & intermediates	2	(38)
halogenated aliphatics	2	(39)
halogenated aromatics	2	(40)
acrylates & latex emulsions	2	(41)
PCB/PBB's	2	(42)
amides, amines, imides	2	(43)
plastizers	2	(44)
resins	2	(45)
elastomers	2	(46)
solvents polar (except water)	2	(47)
carbontetrachloride	2	(48)
trichloroethylene	2	(49)
other solvents nonpolar	2	(50)
solvents halogenated aliphatic.....	2	(51)
solvents halogenated aromatic	2	(52)
oils and oil sludges	2	(53)
esters and ethers	2	(54)
alcohols	2	(55)
ketones & aldehydes	2	(56)
dioxins	2	(57)
Inorganics	2	(58)
salts	2	(59)
mercaptans	2	(60)
Misc..... Mycelium.....	1	(61)
pharmaceutical wastes	2	(62)
paints & pigments	2	(63)
catalysts (eg. vanadium, platinum, palladium)	2	(64)
asbestos	2	(65)
shock sensitive wastes (eg. nitrated toluenes)	2	(66)
air water reactive wastes (eg. P ₄ , aluminum chloride)	2	(67)
wastes with flash point below 100° F.....	2	(68)

Company Name: Pfizer Inc.
Facility Name: Brooklyn Plant
Name of Site: N.Y.C. Department of Sanitation
Address of Site: Ft. of Fountain Ave. and No Henry St. Greenpoint
no. street

Brooklyn	N.Y.	
city	state	zip code

Name of Owner (while used by facility): Same
Address: no. street

city
state
zip code

Current Owner (if different from above): _____
Address: _____
no. street
city state zip code

1. Location (1= the property on which facility is located; 2= off-site)..... [2] (10)
2. Ownership at time of use (1= company ownership; 2=private but not company ownership) 3=public ownership) [3] (11)
3. Current status (1= closed; 2= still in use; 9=don't know) [2] (12)
 - IF CLOSED, specify year closed 19 [] (13-14)
4. Year first used for process waste from this facility .Don't Know... 19 [] (15-16)
5. Year last used for process waste from this facility (enter "79" if still in use) 19 [7] [9] (17-18)
6. Total amount of process waste from this facility disposed at site:
 - thousand gallons [] [] [] [] [] [] [] [] [] [] (19-26)
 - hundred tons [] [] [] [] [] [] [] [] [] [] (27-33)
 - thousand cubic yards [] [] [] [] [] [] [] [] [] [] (34-41)
7. Specify type(s) of disposal method(s) used at site and whether method is still in use (1=currently in use; 2=no longer in use; 3=never used; 9=don't know)
 - landfill, ~~mono~~ industrial waste [9] (42)
 - landfill, mixed industrial waste [1] (43)
 - landfill, drummed waste [1] (44)
 - landfill, municipal refuse co-disposed ... [1] (45)
 - pits/ponds/lagoons [1] (46)
 - deep well injection [3] (47)
 - land farming [3] (48)
 - incineration [1] (49)
 - treatment (eg. neutralizing)..... [3] (50)
 - reprocessing/recycling [9] (51)
 - other (specify) [] (52)
8. Users of this site (1=this facility; 2=this facility and other company facilities only; 3=this company and others; 9=don't know) [3] (53)

LIST NAMES AND ADDRESSES OF OTHER KNOWN USERS BELOW

It is a public sanitation department facility.
Therefore it must have a permit membership list.

1

10

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wast

PROVIDE A COMPLETE LIST OF ALL FIRMS AND INDEPENDENT CONTRACTORS, INCLUDING THE COMPANY AND ITS AFFILIATES AND SUBSIDIARIES, USED TO REMOVE PROCESS WASTES FROM THIS FACILITY SINCE 1950.

Company Name: Pfizer Inc.

Facility Name: Brooklyn Plant's Landfill Area At Lombardy St. Foot of Newtown Creek.

<u>Name of Firm or Contractor</u>	<u>Address</u>	<u>ICC #</u> <u>(If Known)</u>	<u>Years Used</u>
Pfizer Inc.	11 Bartlett St. Brooklyn, N.Y. 11206		40 years

Note: This area Lombardy Street, Foot of Newtown Creek was operated from August 6, 1924 until January 3, 1964.
(It was sold in 1964)

**RESPONSE OF PFIZER INC.
TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S
REQUEST FOR INFORMATION, DATED OCTOBER 25, 2011 – NEWTOWN CREEK
SUPERFUND SITE, KINGS COUNTY AND QUEENS COUNTY, NEW YORK**

EXHIBIT 4

1/4461

ENVIRONMENTAL ASSESSMENT
MYCELIUM APPLICATION SITES
SOUTHEASTERN CONNECTICUT

VOLUME I

Prepared For:

Connecticut Department of Environmental Protection
Hartford, Connecticut

Prepared On Behalf Of:

Pfizer, Inc.
Groton, Connecticut

Prepared By:

Recra Environmental, Inc.
Audubon Business Centre
10 Hazelwood Drive, Suite 106
Amherst, New York 14150

April, 1987

EXECUTIVE SUMMARY

Mycelium is a by-product of several fermentation processes used by the Pfizer Chemical Division at their Groton, Connecticut plant. The feedstock for these fermentation processes consist of various natural products of both animal and vegetable origin and the salts of a number of common materials, all of which are added to supply the necessary controls for the biological processes. Sodium ferrocyanide is used in two of these processes, the citric and itaconic acid processes. The spent mycelium is separated from the processes by filtration. This mycelium by-product has been beneficially recycled since 1972 by using it as an organic fertilizer and soil additive on farms and other plots of land in the general vicinity of Pfizer, Inc.'s Groton plant.

Samples of the mycelium by-product were chemically analyzed and determined to contain detectable concentrations of cyanide. In light of the known toxicity of some forms of cyanide, the Connecticut Department of Environmental Protection ordered Pfizer to conduct appropriate studies to ascertain the history and extent of land application of mycelium, the fate of mycelium cyanide in the environment, and environmental impacts and human health implications of the on-going mycelium application practices.

Mycelium applications have been made at 188 locations in southeastern Connecticut. It was proposed by Pfizer and subsequently approved by the Connecticut Department of Environmental Protection that detailed investigations be performed at two sites which were shown to be representative of the state's hydrogeological characteristics and were determined to be the most environmentally sensitive to contamination from the mycelium cyanide source.

These detailed investigations included geologic and hydrogeologic studies, surface water and groundwater sampling and analysis, sediment and soil evaluations, experimental studies to determine the leachability of the cyanide from mycelium, isotherm studies to evaluate absorption of cyanide as an element of advective transport, attempts to evaluate the applicable cyanide degradation rates and mechanisms, water balance modeling as well as finite element computer modeling, all for purposes of defining environmental impact and human health risks. The extensive investigatory efforts performed at these two sites were specific to these locations but were also designed such that these findings could be extrapolated and applied to the other sites where mycelium has also been applied, albeit in less sensitive environmental settings. The results of these efforts showed excellent agreement between experimental studies, field investigations, and the modeling efforts.

Mycelium-bound cyanide was found to remain present in the environment regardless of the way the mycelium was used or applied. Degradation does occur but at a rate not accurately determined. Consequently, the mycelium related cyanide is considered as reasonably persistent in the environment. The principal source of mycelium cyanide is ferrocyanide; the route of degradation is conversion to free cyanide by photolysis and then subsequent loss of the free cyanide by either volatilization, bio-utilization or biodegradation.

Site specific data indicates that surface water bodies, although immediately adjacent to the sites and receptors of groundwater discharge, are not being contaminated at any measurable level by cyanide. Cyanide levels were measured within the soils, mycelium and soil/mycelium mixtures. The most common form of cyanide present (greater than 95%) was the complex "non-toxic"

form, while free cyanide was rarely observed in detectable concentrations. It was also determined, however, that the cyanide did have a degree of leachability from these materials and that subsequently, certain groundwater samples did have detectable cyanide concentrations. This leachability was seen to be greatest with fresh mycelium and was observed to decrease significantly as the material aged within the environment. Total cyanide in groundwater ranged from non-detectable to approximately 100 ppb; free cyanide values ranged from non-detectable to approximately 25 ppb. These data suggest cyanide mobility in groundwater as well as the potential for "loading" of cyanide to surface water groundwater discharges. In this latter case, although discharge to surface water is believed to occur, the previously mentioned degradation mechanisms prevail in the surface water and no detectable cyanide levels are observed. With regard to the implied mobility, isotherm studies confirmed retardation factors of only 1 to 4 for the cyanide species of concern. These results suggest, as verified by the groundwater data, that minimal adsorption of cyanide occurs as contaminant transport is realized.

Stream sediment samples also show very low total cyanide concentrations and no free cyanide levels. The maximum concentration of 4.1 $\mu\text{g/g}$ was found at the bottom of a pond surrounded by large mounds of mycelium. Trace levels of total cyanide were seen in sediments near or adjacent to application or storage sites and were found to decrease rapidly with distance from the mycelium source.

These data suggest that no aquatic impacts of mycelium cyanide are being realized at the most environmentally sensitive sites. These data also suggest that groundwater appears to be the only significant potential route for

environmental or human exposure. Field data and modeling results, validated with field studies, also indicate that at no time or distance away from the source (based upon hydrogeological considerations relevant to Connecticut) will groundwater concentrations ever exceed or approach the 200 µg/l drinking water standard.

Cyanide materials in the environment, be they the product of road salt, cyanogenic pesticides, fungi or mycelium will all have a substantial degree of mobility and will, based upon the environmental and hydrogeological factors present in Connecticut, be subject to rapid dilution and dispersion as well as degradation by photolysis and/or biodegradation, where applicable.

In consideration of the results of the studies and investigations completed and based upon the health advisories from the U.S. Environmental Protection Agency Office of Drinking Water and the regulations of the State of Connecticut, no risk to human health is being realized by the mycelium presently in the environment. It can also be concluded that although measurable releases of cyanide are believed to be occurring to groundwater, the circumstances supporting this situation provide only minimal impairment of groundwater quality and inconsequential environmental impact.

1.0 INTRODUCTION

The Groton, Connecticut plant of Pfizer, Inc., utilizes a fermentation process which involves the growth of microbes within a nutrient broth to produce itaconic and citric acids. ^{Ferrocyanide is added} Much of the by-product of this process is a fungal mixture composed of mycelium which is the vegetative structure of the microbes. The fermentation process ends when the nutrients in the broth are exhausted which results in the cessation of cellular growth and chemical production. ~~When the fermentation process is complete, sodium ferrocyanide is added to the mixture to aid in the precipitation of the mycelium.~~ The broth is then filtered from the mycelium and the product (e.g. itaconic and/or citric acids) is separated from the broth. The remaining broth is ~~biologically~~ treated as waste water and discharged in accordance with the appropriate regulatory standards and existing permits issued to Pfizer. The mycelium residue that remains for disposal is approximately 70 percent water and composed largely of carbohydrates such as cellulose and starch, fats, protein, and plant nutrients, including traces of zinc and phosphorous (1).

Prior to 1972, this non-toxic biological mycelium residue was disposed of by barging it to an approved site in the Long Island Sound. Although this practice was authorized by the United States Army Corps of Engineers, the Environmental Protection Agency ordered that ocean dumping be stopped since it was in violation of New York State standards covering disposal of solid industrial wastes in its waters. The loss of this disposal method necessitated in the selection of an alternate disposal method for the annual production of more than 50,000 tons of mycelium.

Wrong:
Correct
Arrh

Based upon greenhouse tests which showed that mycelium, when worked into the soil, improves the physical characteristics of the soil and the soils ability to hold water. Pfizer began to promote the use of mycelium residue as an agricultural supplement to enhance the soil (1). The mycelium's nutrient base enriches the soil and provides a slow release nitrogen source which is optimum for systemic uptake. Since the implementation of the use of mycelium as an agricultural supplement, several universities and research institutions have confirmed the value and usefulness of mycelium residue as a soil additive (2, 3).

1.1 Statement of Concern

During the latter portion of 1985, routine sampling and analysis of the mycelium was performed by the Connecticut Department of Environmental Protection (DEP). Results of these analyses indicated the presence of detectable concentrations of cyanide compounds. In light of the known toxicity of certain forms of cyanide, the Connecticut DEP issued a Pollution Abatement Order, #WC4295, to Pfizer, Inc., Groton, Connecticut, dated January 23, 1986. Item (B) of this order required Pfizer to conduct hydrogeological studies of the ground and surface waters, including bottom sediments, of representative mycelium application sites to determine the qualitative and quantitative impacts of such application.

1.2 Program Overview

In response to Pollution Abatement Order #WC4295, a submittal entitled "Proposed Hydrogeological Investigation of Representative Mycelium Application Sites" was made to the Connecticut DEP on February 7, 1986

and was subsequently approved (4). The objectives of this submittal was to develop a body of data about the history and extent of land application of mycelium, and about the fate of any cyanide compound that may be present in the mycelium. Based upon this data, Pfizer proposed to make a scientific evaluation of the environmental impacts of on-going mycelium application practices. The technical approach to accomplish these objectives consisted on three components; 1) site selection, 2) investigative work plan development, and 3) site investigations and assessment. Each of these components is discussed in detail below.

1.2.1 Site Selection

Pfizer identified a total of 188 sites in Connecticut which had received mycelium from the Groton, Connecticut plant. In addition to identifying and locating each site, the quantity of mycelium received and the relative time period when mycelium was received (1973 to 1985) were identified. The method by which the mycelium is applied to the soil at each site was also identified. Utilizing this initial database, Pfizer proposed to apply a numerical rating scheme to all of the sites to permit a timely evaluation of the potential effect of mycelium application on the subsurface environment and adjacent surface water bodies. This method of evaluation was selected to permit the evaluation of the hydrogeologic and surface water conditions at each site separately and to select the two most environmentally sensitive sites. These two sites would then undergo detailed hydrogeologic investigations. It was intended that one of the sites selected would be representative of an area where mycelium was used to revegetate (reclaim) the land following a sand and gravel borrow

operation and the other site would be representative of mycelium used for agricultural activities in a farm setting as these are the two major uses for the mycelium.

The ranking procedure involved the assignment of a numerical value to various physical characteristics of each site related to its hydrogeological conditions and its topographic and surface water features. The numerical values obtained from this ranking procedure provided a relative indication of the environmental sensitivity of each site. The larger the numerical value a site received, the more sensitive the site is to potential environmental impairment. However, the numerical value does not indicate the degree of potential or suspected contamination at a particular site.

Evaluation of the hydrogeologic conditions at the site was accomplished utilizing a modified version of the Environmental Protection Agency's Surface Impoundment Assessment (SIA) program. The program was based on a system developed by Harry E. LeGrand and presented in "A Manual for Evaluating Contamination Potential of Surface Impoundments," (EPA 570/9-78-003) (5). The factors evaluated were:

- o Depth to the saturated zone/material type in the unsaturated zone
- o Groundwater availability
- o Groundwater quality
- o Potential endangerment to current water supplies

Numerical values were assigned to each of these characteristics and summed to yield an overall groundwater rating. The data needed to assign

these numerical values to each characteristic were obtained from various publications, state and federal, available through the Natural Resource Center in Hartford, Connecticut.

Surface water was evaluated utilizing the "Surface Water Route" contained within the "Uncontrolled Hazardous Waste Site Ranking System" (6). This system was developed by the Mitre Corporation for the evaluation and subsequent ranking of hazardous waste sites investigated through the Superfund program. The factors evaluated include:

- o Site slope and intervening terrain
- o 1-year, 24-hour rainfall
- o Distance to nearest surface water body
- o Surface water use
- o Population served by surface water

In a fashion similar to the groundwater evaluation, numerical values were assigned to each of the various factors and summed. This summation was then numerically divided by 2.1 to result in a value for the surface water rating which would be of a similar order of magnitude as the overall groundwater rating. This precluded the unequal weighing of one factor relative to another. The method of application and volume of mycelium present at the sites were used in a qualitative fashion in the final selection process. Method of application was used to sort the sites between agricultural and reclamation whereas the volume amounts were used to insure that the selected sites had received substantial quantities of the mycelium material. A complete discussion of the ranking procedure is presented in the April 7, 1986 submittal to the

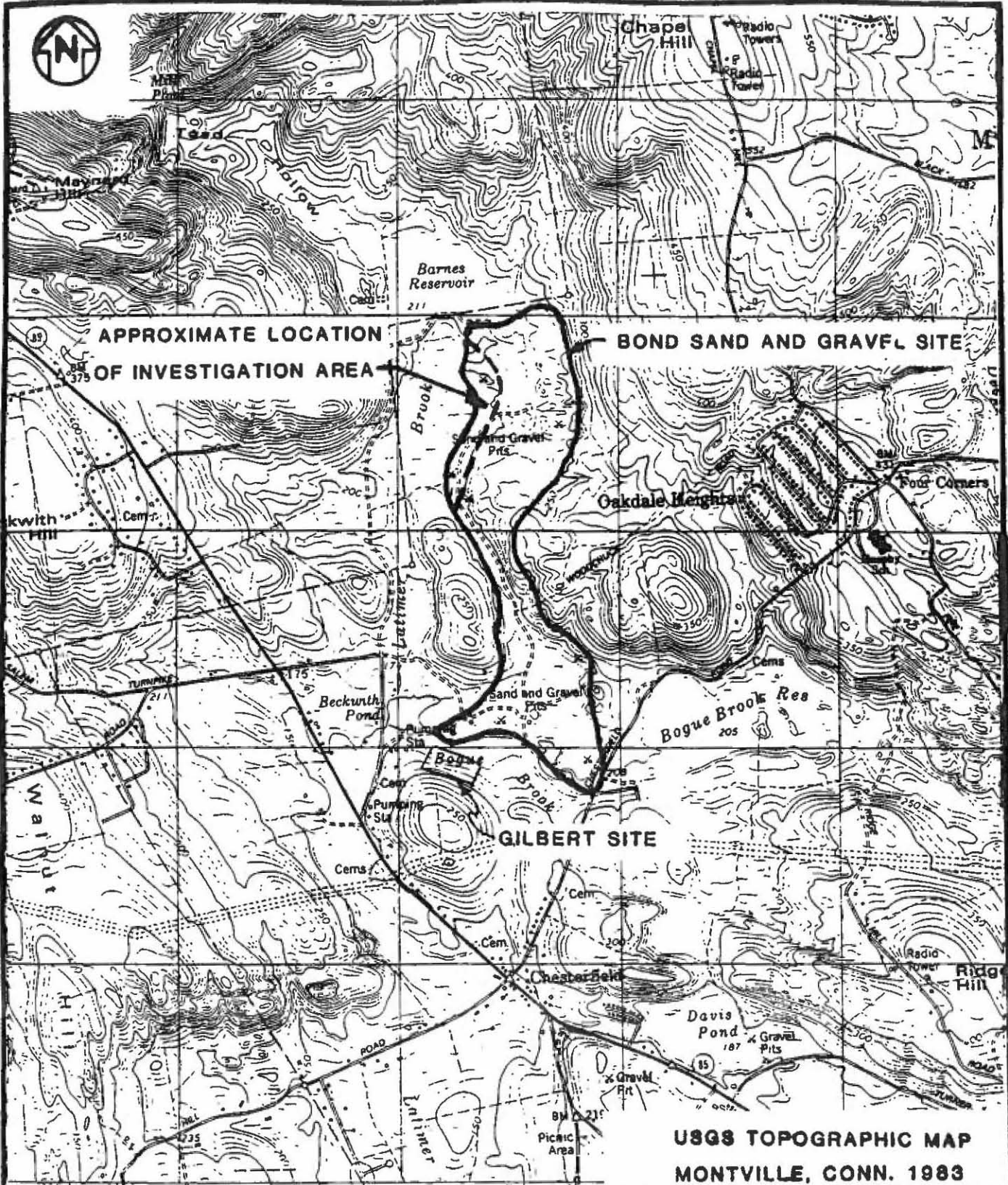
Connecticut DEP entitled "Proposed Systematic Ranking Scheme Mycelium Application Sites, Connecticut," (7).

The results of the systematic ranking of all sites and the selection of the two sites which were identified as being the most environmentally sensitive sites is described in detail in the submission to the Connecticut DEP entitled "Site Ranking and Selection Mycelium Application Sites, Connecticut," (6). The sites selected for further investigation (Figure 1.1), were:

- o Ralph Gilbert property, Beckwith Road, Chesterfield, Connecticut
- o Bond Sand and Gravel property, Chesterfield, Connecticut

The Gilbert property had the highest overall score (54) of all the sites ranked and was chosen as the site representative of mycelium application in a farm setting. The groundwater rating for this site was 25 and the surface water rating was 29. Approximately 4,105 tons of mycelium had been utilized at the site for agricultural purposes. The property is located adjacent to reservoirs which are an emergency water supply for the Town of New London, Connecticut.

The Bond Sand and Gravel property was chosen as the site representative of mycelium application for revegetation (reclamation) related purposes. The site had a total rating of 48 which represents a groundwater rating of 25 and a surface water rating of 23. Approximately 41,500 tons of mycelium has been received at this site. Like the Gilbert property, the Bond Sand and Gravel property is also located in the vicinity of the reservoirs which are used as an emergency water supply for the Town of New London, Connecticut.



USGS TOPOGRAPHIC MAP
MONTVILLE, CONN. 1983



Scale: 1" = 2000'

	By	Date
Dwn.	DLS	01/87
Ckd.		
Ap'vd.		
Rev.		

PFIZER, INC.
GROTON, CT.

SITE LOCATION MAP

Project No. 8C753313

A

FIGURE 1-1

61160-1

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Although these sites are in close proximity to one another, available information indicated two different soil media, a fine sandy loam at the Gilbert property as opposed to medium gravel and sand at the Bond Sand and Gravel property. Based on this and the reported usage of the mycelium, agricultural as opposed to reclamation, the sites were selected for detailed hydrogeologic studies and their selection was subsequently approved by the Connecticut DEP.

1.2.2 Investigative Work Plan Development

Upon receipt of approval from the Connecticut DEP on the selected sites, a site reconnaissance was performed on September 4, 1986. At this time, the sites were inspected for the locations of mycelium application, surface water bodies, and other significant topographic features. Additionally, interviews were conducted with the property owners to obtain information relative to the handling, placement, and utilization of mycelium.

The objective of the investigative program was to develop an understanding of the fate of mycelium derived ferrocyanide in the Connecticut environment from a detailed investigation of the two selected sites. The findings of these investigations would then permit an assessment of the potential environmental impacts, if any, on the remaining 186 mycelium application sites located in Connecticut. The following section outlines the investigative program which was designed to achieve the stated objectives.

1.2.3 Site Investigations and Assessment

Separate investigative work plans were developed to address specific concerns at each of the two sites. Both work plans, however, provide for representative sampling of the soil, sediment, surface water, groundwater, and soil/mycelium mixtures.

At the Gilbert site, eleven borings were advanced. Four of these were converted to groundwater monitoring wells for the purpose of groundwater sampling. Split spoon samples were collected in four of these borings to provide near surface soil samples and samples at specified depths for subsequent analysis. In addition, a grid system was established over the mycelium application area to provide a representative sampling of this field. Samples were collected at four distinct depth intervals, at each grid point, to assess the potential of downward movement of compounds leached from the overlying mycelium. Two soil samples were collected in the vicinity of the site for the purpose of establishing background levels. Surface water and sediment samples were also collected from three locations for analysis. A detailed description of the investigation performed at the Gilbert site is contained in Appendix A.

The investigations conducted at the Bond Sand and Gravel site were similar in nature to those at the Gilbert site. At the Bond Sand and Gravel site five borings were advanced to permit the installation of groundwater monitoring wells. Split spoon samples were collected in each boring. Surface soil samples were collected at a number of locations along the edge of mounds of a soil/mycelium mixture. Samples were collected in three distinct horizons to permit assessment of vertical migration of

cyanide. The mounds of the soil/mycelium mixture were sampled at specified depths through the mounded material. Two soil samples were also collected for the purpose of establishing background levels. Surface water and sediment samples were collected at seven different locations to assess the water quality of the various streams which flow through the site area. Additionally, depth integrated samples were collected from two ponds on the site which receive run-off directly from the soil/mycelium mounds. A detailed description of the investigations performed at the Bond Sand and Gravel site is contained in Appendix B.

Samples of the various materials were subsequently analyzed for total cyanide, weak and dissociable cyanide, total zinc, and additionally, dry weight and percent organic matter determinations (total volatile solids) were made for the soil/sediment materials. In addition to the standard analytical effort, three experimental studies were performed to provide an understanding of the chemodynamic behavior of cyanide compounds. The first of these studies was a soil adsorption isotherm which was conducted within the laboratory to determine the attenuation characteristics of the sites' soils. The remaining experiments were conducted in the field to assess the degradation of cyanide compounds within the Connecticut environment. Two mixtures, one a farm soil/mycelium mixture and the other a sand and gravel/mycelium mixture, were exposed to the natural weathering processes and were sampled periodically and analyzed. In addition, leachate generated from these test plots as a result of precipitation were collected and periodically sampled and analyzed. A detailed description of these experimental studies is contained in Appendix C.

The report presented herein represents the overall assessment of these activities. The assessment encompasses a review and summary of literature pertaining to cyanide in the environment, the findings of the two site investigations, and the experimental field and laboratory studies. This data has been utilized to address the qualitative and quantitative impacts of mycelium applications in the State of Connecticut.

5.0 POTENTIAL FOR THE RELEASE AND MIGRATION OF CYANIDE FROM MYCELIMUM APPLICATIONS IN THE CONNECTICUT ENVIRONMENT

5.1 Identification of Mycelium Application Sites

Pfizer identified 188 locations where shipments of mycelium had been delivered since July, 1973. The majority of the shipments have been to locations within New London County with a small number of locations in southern Windham County. Table 5-1 summarizes the identified sites relative to their location, method of application, and tonnage of mycelium received at that location.

Four principal means of application were identified:

<u>Application Code</u>	<u>Application Method</u>
1	Landspread
2	Stockpile
3	Reclamation
4	Stockpile and Landspreading

Phase I tonnage represents mycelium which was delivered at the designated location between July, 1973 and August, 1983. Phase II tonnage represents deliveries between April, 1983 and December, 1985.

5.2 Comparative Hydrogeology

5.2.1 Surficial Geology

The unconsolidated sediments within southeastern Connecticut are principally stratified drift or till from Pleistocene glaciation. Bedrock outcrops occur occasionally in upland areas; however, for the most part, a mantle of unconsolidated materials overlies the bedrock. Of the two deposits, the stratified drift is the significant source for water supplies (1).

Table 5-1

PFIZER-MYCELUM APPLICATION SITES

PAGE 1

SITE NAME :	APPLICATION CODE :	PHASE 1 TONNAGE :	PHASE 2 TONNAGE :	TOTAL TONNAGE :	QUADRANGLE CODE :
KOLODICK, JOHN	1	5,702		5,702	19
LEO FEDUS AND SONS		23		23	11
BEER, R.		1,897	424	2,321	8
GULYETZ, JOHN		131		131	8
BURNS, EVERETT		1,409		1,409	14
WEBER, GED		48		48	8
RAJEWSKI			2,111	2,111	14
NATTERM, JAMES		3,540	577	4,117	9
MAJCHIER			2,755	2,755	12
KACHOROWSKI, B.		394		394	2
JOE S. LANDFILL		663		663	3
FORSBERG		557	218	775	9
DOM CHEMICAL		44	150	194	8
JENETT CITY GREENHOUSE		22		22	14
HOLDRIDGE, CARL		1,212		1,212	9
WHIPPLE, FRED		133		133	9
WATSON, HENRY		3,615	7,351	10,966	14
SHARP			132	132	7
FOREST CABIN FARM		396		396	19
FONSELA, JUDITH		23		23	4
FATROBANKS			40	40	9
BEATTIE FARM		821		821	10
SOKOL		847	155	1,002	9
NORTHROP			127	127	16
MORGAN, HENRY		577		577	9
KELGEY, PETER		3,357		3,357	17
MCELURE GENE, CLARK LANE		46		46	2
GOOD BROS.		2,032	453	2,485	13
DODIED		113		113	11
CLINTON, 29 OLD STAGE COACH RD.			783	783	1
BOHARA, M.		61		61	13
WHEELER, NATHAN		2,369		2,369	10
SCHACK, VON WITTENAU		187		187	14
RUSSEL, SOFTBALL FIELD			760	760	2
MINER J., 75 CLARK LANE		182	586	768	2
MCKAY, GARY		363		363	9
MAYNARD, WILLIS		1,693		1,693	19
KNIRSCH, A.K., M.D.		22		22	2
JOHNSON, ERNEST		356		356	14
HENRICI, ANN		68		68	6
HANSEN FARM		34,397		34,397	14
ELDRIDGE, STEVE		1,189		1,189	11
COLE, SILL LANE			503	503	1
COONDS			42	42	17
BURZYCKI			1,852	1,852	14
BUFFIN		362	196	558	18
APPLEWOOD FARM		1,171		1,171	9
SELLEN, PETER		476		476	12
ROBINSON, GEORGE		1,129	459	1,588	9
PRIDE CORNER FARMS		572		572	12
PECHKA			112	112	18
PARKINSON, KEITH		358		358	8
N.L. COUNTRY NURSERY		872		872	10
MURRAY			48	48	14

SITE NAME :	APPLICATION CODE :	PHASE 1 TONNAGE :	PHASE 2 TONNAGE :	TOTAL TONNAGE :	QUADRANGLE CODE :
MENGHE	1	89	179	268	7
LEE, LONIE		133		133	9
LANDSCO, INC.		482		482	13
JENKINS			42	42	14
BLUCK, BRUNO		397		397	18
GEER, S.			109	109	14
DAVIS FARM		3,060		3,060	5
CROUCH			242	242	8
BARNES, JEFF		85		85	9
DANKER, DONALD		1,380		1,380	5
ALLEN, FRED		722		722	9
WOLFE, AL		1,280	1,014	2,294	4
WILDOMSKY			302	302	12
WATSON, P.		2,994		2,994	14
TUTHILL NURSERY, THOMAS RD.		235		235	3
TULES, HENRY		911		911	18
STORY, GEORGE		132		132	9
STONE ACRES FARM		2,348		2,348	4
STEWART, ED		69	64	133	8
SPARKLE LAKE FARM, THOMAS ROAD		2,102		2,102	3
SHAFER		22		22	9
RALSTON PURINA CO.		44		44	16
PIANKA			312	312	9
PFARM		3,114	619	3,733	9
MINER, GEORGE		7,511	9,799	17,310	9
MAIN BROTHERS FARM		599	724	1,323	5
HACHUBA, PETE		188	518	706	6
BARRACLOUGH		116		116	9
ALLEN			302	302	18
ABRAMSON		49	200	249	14
WILDOMSKY				0	18
WEISE			1,215	1,215	8
VAILL, S.		911	216	1,127	7
VAILL, E		123	271	394	6
STEFANSKI, BILL		1,736	10,751	12,487	6
SLATZCHEFF, S.		42	337	379	6
PISZCZEK, HENRY		2,561	2,007	4,568	13
NIEMINEN, ARTHUR		184	86	270	15
KERESKAY			377	377	9
MITSKO, MARK		68		68	8
MASHANTUCKET TRIBAL COUNCIL			222	222	9
MARTINI, SS, WHIPPOORWILL DR.			216	216	1
LOPRESTI FARM		2,842	2,281	5,123	14
HOISIE, RAYMOND		170		170	5
HOLDRIDGE FARM NURSERY		1,343	1,873	3,216	9
GILEAU, EUGENE		5,825		5,825	15
GEER, DAVID H.			152	152	14
CROWIN, JOHN		1,000		1,000	9
BROUSSEAU, M.		1,250		1,250	9
YURECHKO			1,272	1,272	14
TAYLOR			44	44	9
SHELDON, DUNCAN		22		22	4
SEKOW, THEODORE		318		318	8
SCHMITZER		1,778		1,778	18

Table 5-1 (continued)

PFIZER-MYCELIUM APPLICATION SITES

PAGE 3

SITE NAME :	APPLICATION CODE :	PHASE 1 TONNAGE :	PHASE 2 TONNAGE :	TOTAL TONNAGE :	QUADRANGLE CODE :
PFIZER FARM	1	696		696	8
MAJCNER		4,750	521	5,271	13
MACKO, B.			560	560	14
KOHANSKY			22	22	8
KARASAVICH, ALEX		21		21	13
HOLZSCHLAG		3,527	4,172	7,699	13
GRENIER, NELSON		267		267	15
GLUCK, WILLIAM		1,771		1,771	18
GARBO-BITTERSWEET FARM		89	244	333	9
GARBAREK, GEO.		3,113		3,113	13
FIRBELEMSKY, W.		1,881	4,709	6,590	6
CASSIDY, FRANCIS		21	149	170	15
BENDER, EDWARD		3,903		3,903	16
ZIELONKO			44	44	4
WILDOWSKY			6,714	6,714	13
WHEELER, ART		90	21	111	9
WATERFORD COUNTRY SCHOOL			1,329	1,329	7
STANKOVICK, LAZO		110		110	18
SEBASTIAN, RALPH		570	4,600	5,170	13
SADEK, S.		230		230	17
PANUS		610	212	822	14
LAMB		1,776	1,639	3,415	8
HUDYNA, B.		395	166	561	7
COWEN			44	44	9
CONE, T.F.		7,564	1,883	9,447	16
CLEVELAND			216	216	9
CHAPMAN, RICHARD		393		393	10
BURGESS, WALTER		389	200	589	8
BLACKWELL, DENNIS		105		105	6
BIGELOW, ERNEST		1,412		1,412	9
BIEDERKA			5,785	5,785	7
BAGEL, MIKE		213	791	1,004	12
IATORSKI			43	43	14
WOBLE, LEO		8,273	2,616	10,889	8
SANKOW, S.		744	739	1,483	6
PILECKI, CARL		43		43	7
WIEWIAROWSKI		762	3,488	4,250	14
MUOLLO, R.		92	1,072	1,164	13
MAGUIRE FARM		48		48	9
MACKO, BRIAN		64		64	14
KONDASH			41	41	7
JANOWICZ, CHARLES		653		653	12
GADGUIS, S.E.		9,309		9,309	7
EYLEY, ALTON		3,960		3,960	18
DR. BINGHAM		1,864		1,864	6
DAVIDSON			21	21	14
BRICK, T.L.		260		260	17
STILLMAN		410	668	1,078	10
NIMTA			5,176	5,176	14
HIRST			817	817	14
COLE			130	130	14
BARR			538	538	14
MACKO, M.			641	641	14
GODDETTE			21	21	14

Table 5-1 (continued)

PFIZER-MYCELIUM APPLICATION SITES

PAGE 4

SITE NAME :	APPLICATION CODE :	PHASE 1 TONNAGE :	PHASE 2 TONNAGE :	TOTAL TONNAGE :	QUADRANGLE CODE :
HOLDRISE, A.	1		65	65	8
HILLARIS, JOHN		1,265	22	1,287	8
UTZ, JOHN		433		433	7
NAHORNICK, ANDY		234	20	254	3
KIMS FARM		1,078		1,078	8
CHAPMAN, DON		88		88	3
SILBERT, RALPH		2,634	1,471	4,105	7
	1				169
WASIEWICH	2		2,152	2,152	18
LEWIS, D.		45,760	910	46,670	10
GLUCK, BOB		77,007	10,705	87,712	18
	2				3
SOMECO PLANT	3	1,003		1,003	3
MORAN FARM		8,665		8,665	10
CRARY			914	914	13
B&O SAND AND GRAVEL		1,781	400	2,181	14
BEER SAND AND GRAVEL			173	173	14
ECCLESTON		67	142	209	15
OSGA			843	843	14
EDMOND SAND BANK		21	64	85	14
DEVANEY, WILLIAM		3,338		3,338	4
DELLA SAND AND GRAVEL			22	22	7
SOMECO		1,419	290	1,709	8
DZIEDZIC, LOUIS		94	147	241	14
BOND SAND AND GRAVEL		16,743	24,741	41,484	7
	3				13
BING MARTIN	4		805	805	11
FIRSELEWSKI, S.		393	4,202	4,595	4
WILLIAMS FARM		1,457	1,029	2,486	12
	4				3

188

188 RECORDS SELECTED

Stratified drift consists of layers and lenses of water-washed and water-laid gravel, sand, silt, and clay. The stratified drift deposits will occur either as a coarse-grained unit capable of yielding large quantities of water or as a fine-grained unit which is capable of only yielding small quantities of water (1).

Till consists of non-sorted, nonstratified, unconsolidated deposits of boulders, cobbles, gravel, sand, silt, and clay which have been deposited directly by glacial ice. Within this region, till forms a mantle covering the bedrock and is characterized by poor water yielding capacities. In areas underlain principally by till and bedrock, the bedrock is the principal water source (1).

5.2.2 Groundwater Classifications

The state of Connecticut has classified the groundwater resources of the state relative to existing and potential usage based upon current or attainable water quality. The use of mycelium applications has occurred in a number of different classification areas which are listed with brief explanations of the classification in Table 5-2.

5.3 Mycelium Application Areas Relative to Surficial Deposits and Groundwater Classifications

A complete listing of the 188 sites in relation to the groundwater classification and the surficial geology is provided in Table 5-3 and summarized in Table 5-4. Of the 188 sites, 81 (43 percent) are situated on stratified drift; whereas 107 (57 percent) are situated on till.

TABLE 5-2
Select Groundwater Classifications*

Class	Description
GAA	Groundwaters tributary to public water supply watersheds or within the area of influence of community water supply wells.
GA	Groundwaters within the area of influence of private wells.
GB/GA	Groundwaters which may not be suitable for direct human consumption without treatment due to waste discharges, spills, or leaks of chemicals or land use imports.
GB	Groundwaters within highly urbanized areas or areas of intense industrial activity and where public water supply service is available.
GA/GC	Areas not presently used for waste disposal and where existing water quality is presumed to be suitable for direct human consumption.

*Connecticut Water Quality Standards, 1985 Revisions Draft. Water Compliance Unit, Connecticut Department of Environmental Protection.

CT. GROUNDWATER CODE	SURFICIAL GEOLOGY:	PERMEABILITY :	% SLOPE:	SITE NAME :	QUADRANGLE CODE :	GROUNDWATER RATING	SURFACE WATER RATING	APPLICATION CODE :	TOTAL TONNAGE :
6A	ALLUVIUM	10E-2	1.0	TAYLOR	9	26	7	1	44
	ALLUVIUM	10E-2	1.0	SOMECHO	8	25	10	3	1,709
	ALLUVIUM	10E-2	1.0	SHAFFER	9	23	8	1	22
	ALLUVIUM	10E-2	1.0	OSGA	14	26	7	3	843
	ALLUVIUM	10E-2	1.0	NIEMIAROWSKI	14	27	8	1	4,250
	ALLUVIUM	10E-2	1.0	MCKAY, GARY	9	22	7	1	363
	ALLUVIUM	10E-2	1.0	MACKO, M.	14	27	10	1	641
	ALLUVIUM	10E-2	1.0	ALLEN	10	25	6	1	302
	ALLUVIUM	10E-2	2.0	STILLMAN	10	27	9	1	1,078
	ALLUVIUM	10E-2	3.0	WORLDIE, LEO	8	26	9	1	10,889
	ALLUVIUM	10E-2	4.0	PECHKA	18	21	9	1	112
	ALLUVIUM	10E-2	5.0	WEISE	8	24	8	1	1,215
	ALLUVIUM	10E-2	5.0	WATSON, P.	14	23	8	1	2,994
	ALLUVIUM	10E-2	5.0	HOLDRIDGE, CARL	9	20	6	1	1,212
	ALLUVIUM	10E-2	5.0	BZIEDZIC, LOUIS	14	28	10	3	241
	ALLUVIUM	10E-2	8.0	YURECHKO	14	25	8	1	1,272
	ALLUVIUM	10E-2	8.0	MURRAY	14	23	7	1	48
	ALLUVIUM	10E-2	8.0	GOODETTE	14	27	10	1	21
	ALLUVIUM	10E-4 TO 10E-2	3.0	CONE, Y.F.	16	25	9	1	9,447
	ALLUVIUM	10E-4 TO 10E-2	6.0	PANUS	14	25	9	1	822
	ALLUVIUM	10E-4 TO 10E-2	1.0	ZATORSKI	14	27	8	1	43
	ALLUVIUM	10E-4 TO 10E-2	1.0	WHIPPLE, FRED	9	17	10	1	133
	ALLUVIUM	10E-4 TO 10E-2	1.0	SOKOL	9	21	7	1	1,002
	ALLUVIUM	10E-4 TO 10E-2	1.0	SENKOW, THEODORE	8	25	8	1	318
	ALLUVIUM	10E-4 TO 10E-2	1.0	RUSSEL, SOFTBALL FIELD	2	21	8	1	760
	ALLUVIUM	10E-4 TO 10E-2	1.0	NORTHROP	16	21	7	1	127
	ALLUVIUM	10E-4 TO 10E-2	1.0	LEE, LONIE	9	22	8	1	133
	ALLUVIUM	10E-4 TO 10E-2	1.0	HOLDRIDGE FARM NURSERY	9	23	9	1	3,216
	ALLUVIUM	10E-4 TO 10E-2	1.0	EXLEY, ALTON	18	27	8	1	3,960
	ALLUVIUM	10E-4 TO 10E-2	1.0	DR. BINGHAM	6	27	8	1	1,864
	ALLUVIUM	10E-4 TO 10E-2	1.0	COMEN	9	25	9	1	44
	ALLUVIUM	10E-4 TO 10E-2	1.0	BURZYCKI	14	22	7	1	1,852
	ALLUVIUM	10E-4 TO 10E-2	1.0	BUFFIN	18	22	7	1	558
	ALLUVIUM	10E-4 TO 10E-2	1.0	BROUSSEAU, M.	9	24	8	1	1,250
	ALLUVIUM	10E-4 TO 10E-2	1.0	BRICK, T.L.	17	27	8	1	260
	ALLUVIUM	10E-4 TO 10E-2	1.0	BIEDERKA	7	25	9	1	5,785
	ALLUVIUM	10E-4 TO 10E-2	1.0	BARNES, JEFF	9	22	8	1	85
	ALLUVIUM	10E-4 TO 10E-2	1.0	ALLYN, FRED	9	21	9	1	722
	ALLUVIUM	10E-4 TO 10E-2	2.0	TULES, HENRY	10	25	6	1	911
	ALLUVIUM	10E-4 TO 10E-2	3.0	GLUCK, BOB	10	28	9	2	87,712
	ALLUVIUM	10E-4 TO 10E-2	3.0	GABBOIS, S.E.	7	27	8	1	9,309
	ALLUVIUM	10E-4 TO 10E-2	3.0	CROWIN, JOHN	9	23	9	1	1,000
	ALLUVIUM	10E-4 TO 10E-2	3.3	RALSTON PURINA CO.	16	22	9	1	44
	ALLUVIUM	10E-4 TO 10E-2	3.3	APPLEWOOD FARM	9	21	8	1	1,171
	ALLUVIUM	10E-4 TO 10E-2	4.0	PIANKA	9	21	10	1	312
	ALLUVIUM	10E-4 TO 10E-2	4.0	GILEAU, EUGENE	15	24	8	1	5,825
	ALLUVIUM	10E-4 TO 10E-2	4.5	SADEK, S.	17	25	9	1	230
	ALLUVIUM	10E-4 TO 10E-2	5.0	MELGEY, PETER	17	21	7	1	3,357
	ALLUVIUM	10E-4 TO 10E-2	5.0	MACKO, B.	14	25	8	1	560
	ALLUVIUM	10E-4 TO 10E-2	6.0	BEER, G.	14	22	8	1	109
	ALLUVIUM	10E-4 TO 10E-2	8.0	KONDASH	7	25	10	1	41
	ALLUVIUM	10E-4 TO 10E-2	8.0	KACHOROWSKI, B.	2	17	8	1	394
	ALLUVIUM	10E-4 TO 10E-2	8.0	HANSEN FARM	14	21	8	1	34,397
	ALLUVIUM	10E-4 TO 10E-2	8.0	GRENIER, NELSON	15	26	7	1	267

CT. GROUNDWATER CODE	SURFICIAL GEOLOGY:	PERMEABILITY :	% SLOPE:	SITE NAME :	SUADRANGLE CODE :	GROUNDWATER RATING	SURFACE WATER RATING	APPLICATION CODE :	TOTAL TONNAGE :
GA	ALLUVIUM	10E-4 TO 10E-2	8.0	DAVIDSON	14	25	10	1	21
	ALLUVIUM	10E-4 TO 10E-2	8.0	CASSIDY, FRANCIS	15	26	7	1	170
	ALLUVIUM	10E-4 TO 10E-2	15.0	WILDOBSKY	18	24	8	1	0
	ALLUVIUM	10E-4 TO 10E-2	8.0	WIRST	14	26	10	1	817
	ALLUVIUM	10E-5	1.0	ROBINSON, GEORGE	9	21	9	1	1,588
	ALLUVIUM	10E-5	5.0	BURNS, EVERETT	14	16	8	1	1,409
	ALLUVIUM	10E-5 TO 10E-4	2.0	KIEMINEN, ARTHUR	15	23	9	1	270
	ALLUVIUM	10E-5 TO 10E-4	3.0	FAIRBANKS	9	18	9	1	40
	ALLUVIUM	10E-5 TO 10E-4	3.0	CLEVELAND	9	25	9	1	216
	ALLUVIUM	10E-5 TO 10E-4	4.0	MEMESKAY	9	23	9	1	377
	ALLUVIUM	10E-5 TO 10E-4	5.0	MINER, GEORGE	9	23	8	1	17,310
	TILL	10E-2	1.0	GEER SAND AND GRAVEL	14	24	8	3	173
	TILL	10E-2	3.0	COLE	14	28	8	1	130
	TILL	10E-2	3.0	BARR	14	27	9	1	538
	TILL	10E-2	3.0	B&O SAND AND GRAVEL	14	23	7	3	2,181
	TILL	10E-4 TO 10E-2	1.0	WOLFE, AL	4	22	9	1	2,294
	TILL	10E-4 TO 10E-2	1.0	WALL, E	6	24	8	1	394
	TILL	10E-4 TO 10E-2	1.0	STORY, GEORGE	9	22	9	1	132
	TILL	10E-4 TO 10E-2	1.0	STEFANSKI, BILL	6	23	9	1	12,487
	TILL	10E-4 TO 10E-2	1.0	SHELDON, DUNCAN	4	24	9	1	22
	TILL	10E-4 TO 10E-2	1.0	SANKOW, S.	6	27	8	1	1,483
	TILL	10E-4 TO 10E-2	1.0	PFLIZER FARM	8	25	8	1	696
	TILL	10E-4 TO 10E-2	1.0	NACHIER	12	18	7	1	2,755
	TILL	10E-4 TO 10E-2	1.0	NACHUDA, PETE	6	22	9	1	706
	TILL	10E-4 TO 10E-2	1.0	HUDYNA, B.	7	25	9	1	561
	TILL	10E-4 TO 10E-2	1.0	GARBAREK, GED.	13	25	8	1	3,113
	TILL	10E-4 TO 10E-2	1.0	CRARY	13	21	9	3	914
	TILL	10E-4 TO 10E-2	1.0	COTE, SILL LANE	1	20	9	1	503
	TILL	10E-4 TO 10E-2	1.0	BAGEL, MIKE	12	25	9	1	1,004
	TILL	10E-4 TO 10E-2	3.0	WILDOBSKY	13	25	9	1	6,714
	TILL	10E-4 TO 10E-2	3.0	MINTA	14	27	9	1	5,176
	TILL	10E-4 TO 10E-2	3.0	LAND	8	25	9	1	3,415
	TILL	10E-4 TO 10E-2	3.0	FOREST CABIN FARM	19	19	8	1	396
	TILL	10E-4 TO 10E-2	3.0	FIRSELEWSKY, W.	6	24	9	1	6,590
	TILL	10E-4 TO 10E-2	3.0	BURGESS, WALTER	8	25	9	1	589
	TILL	10E-4 TO 10E-2	3.3	SELLEN, PETER	12	21	9	1	476
	TILL	10E-4 TO 10E-2	3.5	WHEELER, NATHAN	10	21	8	1	2,369
	TILL	10E-4 TO 10E-2	3.6	ECCLESTON	15	24	8	3	209
	TILL	10E-4 TO 10E-2	4.5	ZILOWKO	4	25	9	1	44
	TILL	10E-4 TO 10E-2	4.5	SCHACK, VON WITTENAU	14	21	8	1	187
	TILL	10E-4 TO 10E-2	5.0	WHEELER, ART	9	25	9	1	111
	TILL	10E-4 TO 10E-2	5.0	STEWART, ED	8	22	9	1	133
	TILL	10E-4 TO 10E-2	5.0	PRIDE CORNER FARMS	12	21	9	1	572
	TILL	10E-4 TO 10E-2	5.0	JENKINS	14	22	8	1	42
	TILL	10E-4 TO 10E-2	5.0	GLUCK, BRUND	18	22	8	1	397
	TILL	10E-4 TO 10E-2	5.0	CLINTON, 29 OLD STAGE COACH RD.	1	19	9	1	783
	TILL	10E-4 TO 10E-2	5.0	BLACKWELL, DENNIS	6	25	9	1	105
	TILL	10E-4 TO 10E-2	5.5	JOHNSON, ERNEST	14	21	8	1	356
	TILL	10E-4 TO 10E-2	6.0	SEBASTIAN, RALPH	13	25	9	1	5,170
	TILL	10E-4 TO 10E-2	6.0	FIRSELEWSKI, S.	6	23	9	4	4,595
	TILL	10E-4 TO 10E-2	6.0	EDMOND SAND BANK	14	25	9	3	85
	TILL	10E-4 TO 10E-2	6.0	COOMBS	17	21	8	1	42
	TILL	10E-4 TO 10E-2	6.0	CHAPMAN, RICHARD	10	25	9	1	393
	TILL	10E-4 TO 10E-2	6.6	STANKOVICK, LAZO	18	25	9	1	110

C1. GROUNDWATER CODE SURFICIAL GEOLOGY: PERMEABILITY : % SLOPE: SITE NAME : QUADRANGLE CODE : GROUNDWATER RATING SURFACE WATER RATING APPLICATION CODE : TOTAL TONNAGE :

6A	TILL	10E-4 TO 10E-2	8.0	WATERFORD COUNTRY SCHOOL	7	25	9	1	1,329
	TILL	10E-4 TO 10E-2	8.0	VAILL, G.	7	23	9	1	1,127
	TILL	10E-4 TO 10E-2	8.0	PARKINSON, KEITH	8	23	7	1	358
	TILL	10E-4 TO 10E-2	8.0	GEER, DAVID H.	14	22	10	1	152
	TILL	10E-4 TO 10E-2	8.0	DAVIS FARM	5	24	6	1	3,060
	TILL	10E-4 TO 10E-2	8.0	ABRAMSON	14	23	8	1	249
	TILL	10E-4 TO 10E-2	9.0	GOOD BROS.	13	21	7	1	2,485
	TILL	10E-4 TO 10E-2	10.0	SHARP	7	21	6	1	132
	TILL	10E-4 TO 10E-2	10.0	SCHWITZER	18	23	10	1	1,778
	TILL	10E-4 TO 10E-2	10.0	MORGAN, HENRY	9	20	8	1	577
	TILL	10E-4 TO 10E-2	10.0	MILLARIS, JOHN	8	23	26	1	1,287
	TILL	10E-4 TO 10E-2	10.0	MAYNARD, WILLIS	19	19	10	1	1,693
	TILL	10E-4 TO 10E-2	10.0	MAGUIRE FARM	9	25	10	1	48
	TILL	10E-4 TO 10E-2	10.0	MACKO, BRIAN	14	25	10	1	64
	TILL	10E-4 TO 10E-2	10.0	LEWIS, D.	10	25	10	2	46,670
	TILL	10E-4 TO 10E-2	10.0	JANOWICZ, CHARLES	12	25	10	1	653
	TILL	10E-4 TO 10E-2	10.0	HOLZSCHLAG	13	23	10	1	7,699
	TILL	10E-4 TO 10E-2	10.0	GLUCK, WILLIAM	18	23	10	1	1,771
	TILL	10E-4 TO 10E-2	10.0	FORSBERG	9	17	8	1	775
	TILL	10E-4 TO 10E-2	15.0	BARRACLOUGH	9	21	10	1	116
	TILL	10E-4 TO 10E-2	17.5	N.L. COUNTRY NURSERY	10	21	9	1	872
	TILL	10E-4 TO 10E-2	17.5	MAJCHER	13	23	10	1	5,271
	TILL	10E-4 TO 10E-2	20.0	MARTINI, S3, WHIPPOORWILL DR.	1	22	10	1	216
	TILL	10E-5	8.0	KENIGHE	7	20	10	1	268
	TILL	10E-5	8.0	GEER, R.	8	12	7	1	2,321
	TILL	10E-5 TO 10E-2	4.8	MOLODICK, JOHN	19	13	6	1	5,702
	TILL	10E-5 TO 10E-4	0.0	WILDOMSKY	12	23	8	1	302
	TILL	10E-5 TO 10E-4	1.0	SLAZTSCHEFF, S.	6	23	9	1	379
	TILL	10E-5 TO 10E-4	1.0	PFARM	9	21	10	1	3,733
	TILL	10E-5 TO 10E-4	1.0	HENRICI, ANN	6	21	8	1	68
	TILL	10E-5 TO 10E-4	1.0	DEVANEY, WILLIAM	4	25	9	3	3,338
	TILL	10E-5 TO 10E-4	3.0	FONSELA, JUDITH	4	19	8	1	23
	TILL	10E-5 TO 10E-4	3.3	WILLIAMS FARM	12	25	9	4	2,486
	TILL	10E-5 TO 10E-4	3.3	BEATTIE FARM	10	20	7	1	821
	TILL	10E-5 TO 10E-4	5.0	MINER J., 75 CLARK LANE	2	21	8	1	768
	TILL	10E-5 TO 10E-4	5.0	LEO FERJIS AND SONS	11	12	7	1	23
	TILL	10E-5 TO 10E-4	5.0	ELDRIDGE, STEVE	11	21	8	1	1,189
	TILL	10E-5 TO 10E-4	5.0	BIGELON, ERNEST	9	25	9	1	1,412
	TILL	10E-5 TO 10E-4	6.0	GARDO-BITTERSWEET FARM	9	24	9	1	333
	TILL	10E-5 TO 10E-4	7.0	STONE ACRES FARM	4	23	8	1	2,348
	TILL	10E-5 TO 10E-4	8.0	BANKER, DONALD	5	23	7	1	1,380
	TILL	10E-5 TO 10E-4	10.0	MCCLURE GENE, CLARK LANE	2	20	8	1	46
	TILL	10E-5 TO 10E-4	10.0	KNIRSCH, A.K., N.D.	2	19	10	1	22
	TILL	10E-5 TO 10E-4	15.0	BENDER, EDWARD	16	23	10	1	3,903

6A

405,886 152

6A/GC

ALLUVIUM
ALLUVIUM

10E-4 TO 10E-2
10E-2

1.0 WASIEWICH
3.0 MORAN FARM

18
10

24
20

6
7

2
3

2,152
8,665

6A/GC

10,817 2

6AA

ALLUVIUM

10E-2

1.0 UTZ, JOHN

7

25

25

1

433

CT. GROUNDWATER CODE	SURFICIAL GEOLOGY:	PERMEABILITY :	1 SLOPE:	SITE NAME :	QUADRANGLE CODE :	GROUNDWATER RATING	SURFACE WATER RATING	APPLICATION CODE :	TOTAL TONNAGE :
GAA	ALLUVIUM	10E-2	3.0	BOND SAND AND GRAVEL	7	25	23	3	41,484
	ALLUVIUM	10E-4 TO 10E-2	0.0	MAHORNICK, ANDY	3	25	27	1	254
	ALLUVIUM	10E-4 TO 10E-2	0.0	CHAPMAN, DON	3	26	26	1	88
	ALLUVIUM	10E-4 TO 10E-2	3.0	DODDIO	11	22	6	1	113
	TILL	10E-4 TO 10E-2	1.0	MATTERN, JAMES	9	18	7	1	4,117
	TILL	10E-4 TO 10E-2	1.0	KOHANSKY	8	23	10	1	22
	TILL	10E-4 TO 10E-2	1.0	HOLDRIDGE, A.	8	20	25	1	65
	TILL	10E-4 TO 10E-2	3.0	KING FARM	8	25	27	1	1,078
	TILL	10E-4 TO 10E-2	5.0	WEBER, GEO	8	18	7	1	48
	TILL	10E-4 TO 10E-2	5.0	MUGELLO, R.	13	25	10	1	1,164
	TILL	10E-4 TO 10E-2	8.0	PILECKI, CARL	7	25	10	1	43
	TILL	10E-4 TO 10E-2	8.0	CROUCH	8	20	10	1	242
	TILL	10E-4 TO 10E-2	9.0	GILBERT, RALPH	7	25	29	1	4,105
	TILL	10E-4 TO 10E-2	10.0	HITSKO, MARK	8	23	9	1	68
	TILL	10E-4 TO 10E-2	10.0	NASHANTUCKET TRIBAL COUNCIL	9	22	10	1	222
	TILL	10E-4 TO 10E-2	10.0	LOPRESTI FARM	14	23	9	1	5,123
	TILL	10E-4 TO 10E-2	15.0	WATSON, HENRY	14	18	9	1	10,966
	TILL	10E-5 TO 10E-4	5.0	PISICZEK, HENRY	13	23	9	1	4,568
	TILL	10E-5 TO 10E-4	10.0	KARASAVICH, ALEX	13	23	10	1	21
GAA									74,224 20
GB	ALLUVIUM	10E-2	1.0	DDW CHEMICAL	8	19	6	1	194
	ALLUVIUM	10E-2	1.0	BOMARA, M.	13	21	7	1	61
	ALLUVIUM	10E-4 TO 10E-2	0.0	TUTHILL NURSERY, THOMAS RD.	3	24	7	1	235
	ALLUVIUM	10E-4 TO 10E-2	0.0	SPARKLE LAKE FARM, THOMAS ROAD	3	24	7	1	2,102
	ALLUVIUM	10E-4 TO 10E-2	0.0	SOMEKO PLANT	3	20	7	3	1,003
	ALLUVIUM	10E-4 TO 10E-2	1.0	LANDSCO, INC.	13	23	7	1	482
	ALLUVIUM	10E-4 TO 10E-2	8.3	JENETT CITY GREENHOUSE	14	18	8	1	22
	TILL	10E-5 TO 10E-4	10.0	JOE S. LANDFILL	3	19	6	1	663
GB									4,762 8
GB/GA	ALLUVIUM	10E-2	3.0	RAJEWSKI	14	19	6	1	2,111
	ALLUVIUM	10E-4 TO 10E-2	8.0	DELLA SAND AND GRAVEL	7	26	8	3	22
	TILL	10E-4 TO 10E-2	3.0	MAIN BROTHERS FARM	5	23	8	1	1,323
	TILL	10E-4 TO 10E-2	3.0	GULYCZ, JOHN	8	18	5	1	131
	TILL	10E-4 TO 10E-2	8.0	MOXSIE, RAYMOND	5	24	8	1	170
	TILL	10E-5 TO 10E-4	1.0	BING MARTIN	11	13	7	4	805
GB/GA									4,562 6
									500,251 188

188 RECORDS SELECTED

TABLE 5-4
Distribution of Mycelium Application Areas Relative
to Surficial Geology and Groundwater Classifications

Surficial Geology	Till	Stratified Drift	Total
Groundwater Classification			
GAA	15	5	20
GA	87	65	152
GB/GA	4	2	6
GB	1	7	8
GA/GC	-	2	2
Total	107	81	188

Ninety-one percent, 177 of the sites are located within areas classified as GA and GAA water resources. Seventy of the 177 sites are situated on stratified drifts with the remainder of the sites, 107, situated in till.

5.4 Assessment of Anticipated Conditions at Other Sites

Incorporation of the findings and results from the experimental field and laboratory studies with the results generated from the hydrogeological assessments at the two most environmentally sensitive sites enables the assessment of anticipated conditions at the remaining 186 mycelium application sites. As noted previously, the remaining sites are located in New London County, with a few sites located in Windham County. The surficial deposits anticipated at the remaining sites are alluvial/outwash deposits and/or till. Permeability values, as presented on Table 5-3, range from 10^{-2} cm/sec to 10^{-6} cm/sec. Based on this preliminary assessment of the hydrogeology, the remaining sites should mirror similar hydrogeologic conditions encountered at the Bond Sand and Gravel and/or the Gilbert site. The Bond Sand and Gravel site is underlain by alluvial/outwash deposits with field determined permeabilities of approximately 10^{-3} cm/sec. The Gilbert site is underlain by till with field determined permeabilities of approximately 10^{-4} cm/sec. This similarity in hydrogeology between the investigated sites and the remaining 186 sites would result in a similarity in subsurface transport characteristics (i.e., rate of groundwater flow, soil attenuation capabilities).

Based on the information evolving from the experimental field and laboratory studies, total cyanide, and to a lesser degree, free cyanide (weak and dissociable) is leachable from soil/mycelium mixtures. Utilizing the results from the experimental field studies for the Gilbert soil/mycelium

mixture and the farm soil/mycelium mixtures, an average yearly concentration of 112 $\mu\text{g/l}$ and 55 $\mu\text{g/l}$ of total cyanide is available for subsequent migration via surface and/or subsurface transport. In addition, based on the field study results, a range of 5% to 13% of the available total cyanide was leached during the first year and 4% to 11% each subsequent year thereafter. Experimental laboratory studies indicated that attenuation of total cyanide within the subsurface is minimal. This latter finding was similar to past studies reported in the literature.

The findings/results of the field and laboratory studies were similar to the results generated from the hydrogeological investigations conducted at the two most environmentally sensitive sites. The stockpiled soil/mycelium mixture at Bond Sand and Gravel and the soil/mycelium mixture covering the Gilbert site contained detectable total cyanide in the solid matrix. At both sites, the soil/mycelium mixtures have been placed for a number of years. This finding parallels the field studies in that total cyanide is not completely removed from the soil/mycelium mixture immediately after its introduction into the environment. Total cyanide remains within the solid matrix of the soil/mycelium mixture over time and a percentage, based on the field studies, is leachable and available for transport via surface waters and/or groundwater.

Analysis of surface waters adjacent to both sites and in direct communication with the groundwater system underlying both sites did not detect total and/or free cyanide except for the surface water sample obtained just above the bottom of the small pond located at Bond Sand and

Gravel. Based on these results, mycelium related cyanide is not affecting surface water quality at either site.

Analysis of groundwater underlying both sites did indicate the presence of total cyanide and, to a lesser extent, free cyanide. Total cyanide was present at concentrations ranging from 0.03 mg/l to 0.076 mg/l at the Gilbert site, and 0.40 mg/l to 0.091 mg/l at the Bond Sand and Gravel site. These results depict the groundwater quality directly underlying the soil/mycelium mounds at Bond Sand and Gravel and approximately twenty-five feet hydraulically downgradient of the major application area at the Gilbert site. The resultant groundwater data from both sites does suggest that mycelium-related cyanide is present in the groundwater directly underlying or in close proximity to soil/mycelium areas. However, the groundwater concentrations do not exceed or approach the 200 µg/l drinking water standard.

Extrapolation of the results of the field and laboratory study and the hydrogeological assessment to the remaining 186 mycelium application sites would suggest the following anticipated conditions. The conditions are:

- o total cyanide and, to a much lesser extent, free cyanide would be present on the solid matrix of soil/mycelium mixtures in application areas;
- o any adjacent surface water bodies would not be affected by mycelium related cyanide;
- o groundwater immediately underlying and in close proximity to application areas potentially will show the presence of mycelium related cyanide; and
- o the concentrations in groundwater are not expected to exceed or approach the 200 µg/l drinking water standards.

Further assessment of anticipated conditions at the remaining 186 sites was accomplished through the utilization of a finite element computer model. The model selected for this exercise was "Chemical Transport by Three Dimensional Ground Water Flows (Version For IBM-PC)", prepared by D.K. Babu, G.F. Pinder and A. Niemi (2). The input parameters for the model, rationale, and resultant preliminary output are discussed below.

Prior to the utilization of the model, a water balance was prepared for the area in which the mycelium application sites were located. The water balance determination followed the methodology described in "Use of the Water Balance Method for Predicting Leachate Generation from Solid Waste Disposal Sites (SW-168)" prepared by D.G. Fenn, J. Hanley and T.V. DeGeare (3).

The purpose of the water balance was to determine the amount of water on an annual basis available to recharge the groundwater. The determined values were subsequently considered during the execution of the modeling program. The input parameters into the water balance were reflective of general meteorological conditions for southeastern Connecticut.

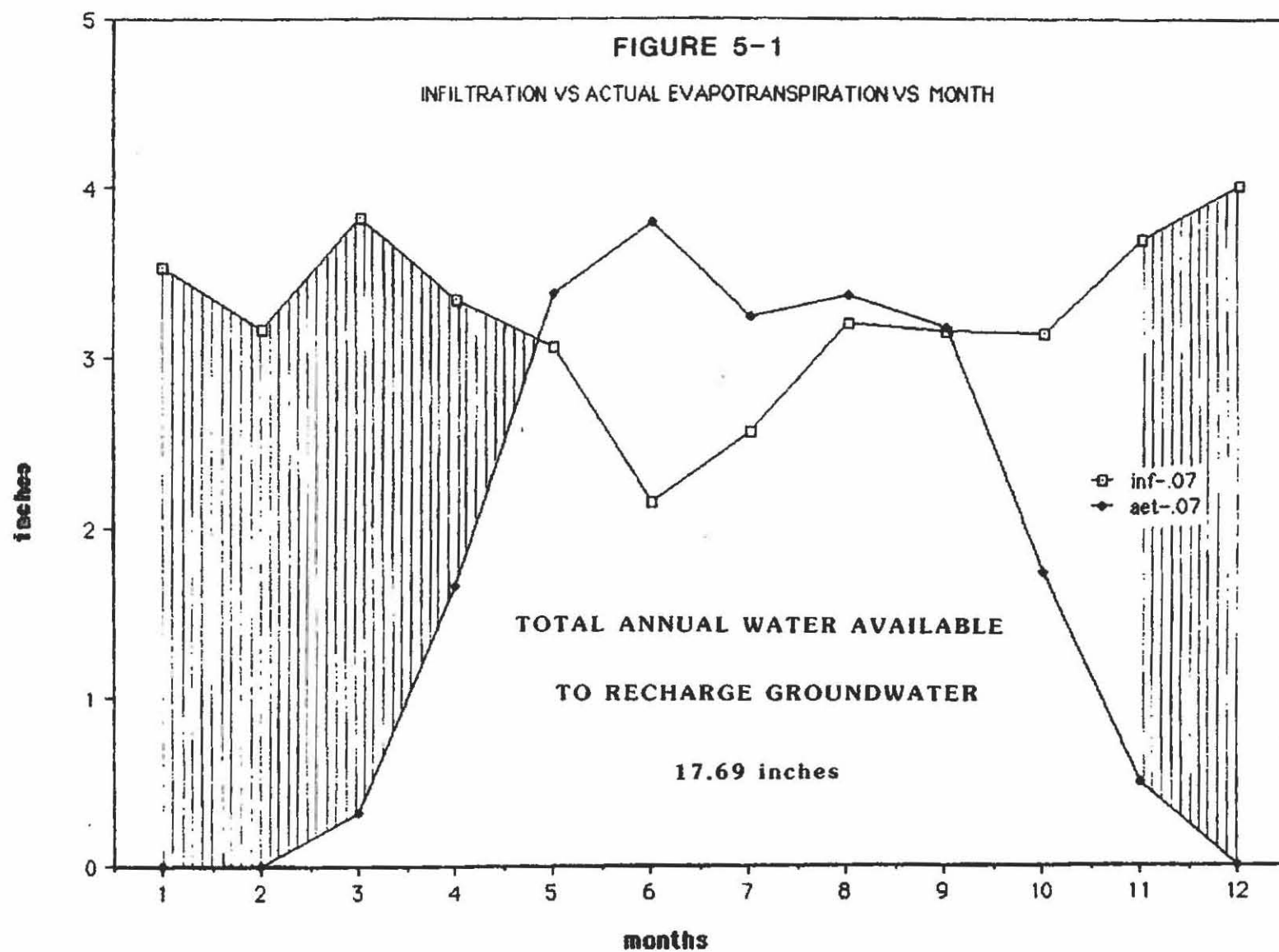
Two water balance calculations were performed to reflect two different topographic settings. One water balance was prepared reflecting a hillside (i.e., topographic slope = 0.07) and another prepared for a floodplain site (i.e., topographic slope = 0.02). The resultant findings are presented graphically on Figure 5.1 and Figure 5.2. As shown on Figure 5.1, 17.69 inches are available for annual recharge to the groundwater at hillside sites; figure 5.2 shows 23.07 inches available annually at floodplain sites. The determined amount of water available is that amount of precipitation less evapotranspiration, runoff and soil moisture

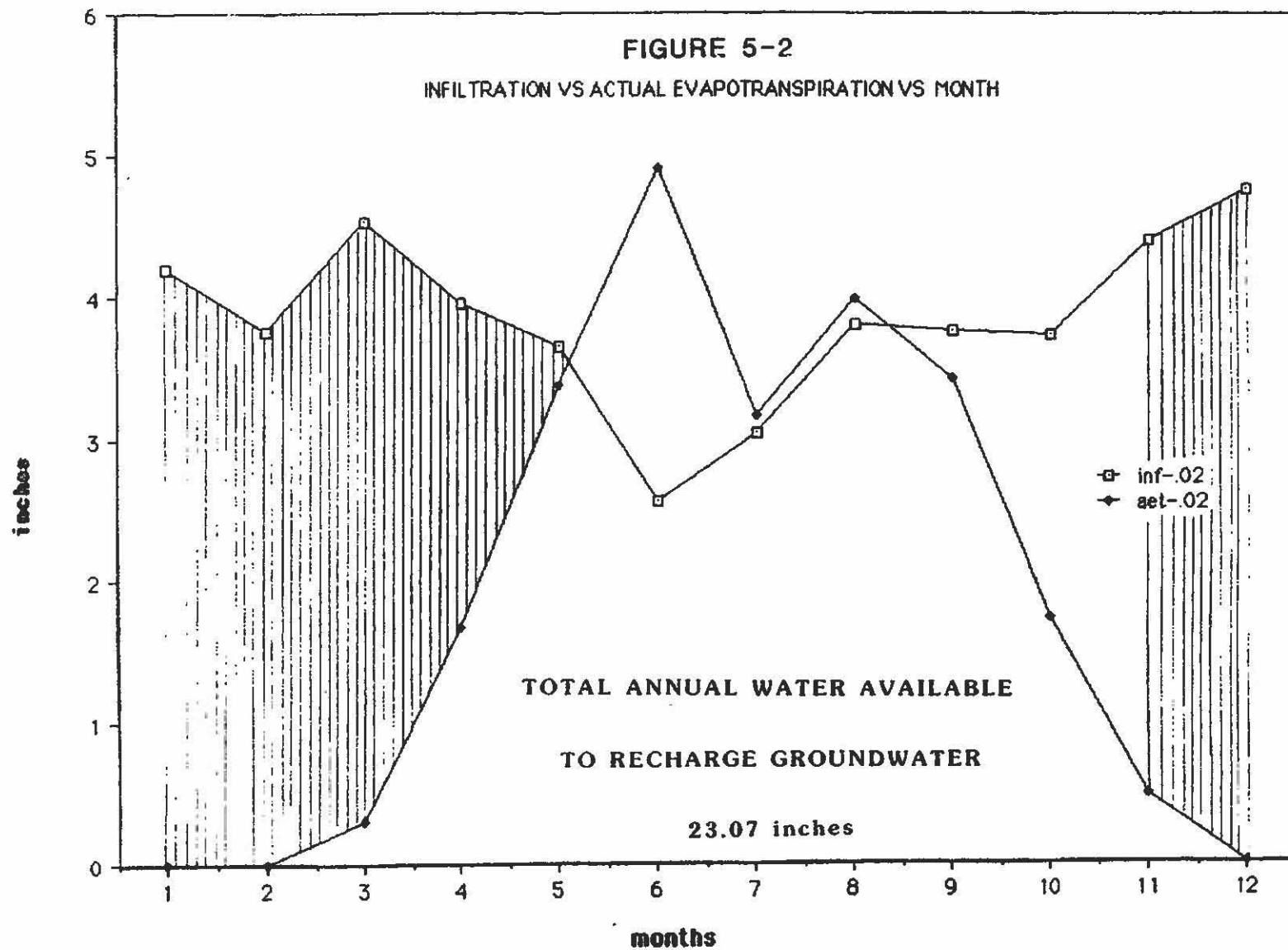
requirements. As illustrated by the shaded area on Figures 5.1 and 5.2, the majority of recharge to the groundwater system occurs during the first part of the year (i.e., January, February, March, April) and the latter part of the year (i.e., November and December). During the summer months, evapotranspiration exceeds infiltration and depletes the soil moisture. During late summer and fall, the water available for infiltration must restore the soil moisture requirement.

Once soil moisture has been satisfied, water is then available to recharge the groundwater. The approach to this water balance determination assumes that the water, during winter months when precipitation is in the form of snow and a frost line is present in the subsurface diminishing downward movement of water, eventually is available to recharge the groundwater.

The purpose of the finite element model is to compute the concentration of a dissolved chemical species in the aquifer at any specified place and time. In accordance with the model, changes in chemical concentration occur within the groundwater system primarily due to four distinct processes:

1. Convective transport, in which dissolved chemicals are moving with the flowing groundwater.
2. Hydrodynamic dispersion, in which molecular and ionic diffusion and small-scale variation in the velocity of flow through the porous media cause the paths of dissolved molecules and ions to diverge or spread from the average direction of groundwater flow.
3. Mixing (or dilution), in which water of one composition is introduced into water of a different composition, whether through groundwater flow or infiltration from precipitation.





4. Adsorption reactions in which some amount of a particular dissolved chemical species may be removed from the groundwater due to chemical and physical reactions between the water and the solid aquifer materials (4).

The model does not consider chemical degradation of the constituent during transport.

In evaluating the output of computer simulation models, it is important to realize that the model should be used as a tool for evaluating potential trends. Without extensive efforts involving both simulations and field verification, it is difficult to use the results of the modeling as a quantifiable predictive tool. Computer simulations are valuable in that they provide an opportunity to observe, in a qualitative sense, movement of constituents in the groundwater regime and can aid in the assessment of environmental concerns.

The model is a steady-state finite element model with the ability to simulate water table conditions, including infiltration. In calculating groundwater flow and contaminant transport, the model utilizes finite element-Galerkin techniques with a finite difference scheme to represent irregular shapes accurately. The flow domain is assumed to possess a constant horizontal cross-section, while the top and bottom boundaries are allowed to be gently sloping surfaces. A finite element formulation is applied to the horizontal cross-section and the finite difference method to the vertical direction. The method produces accurate solutions while providing mathematical flexibility to accurately represent irregular geometry (2).

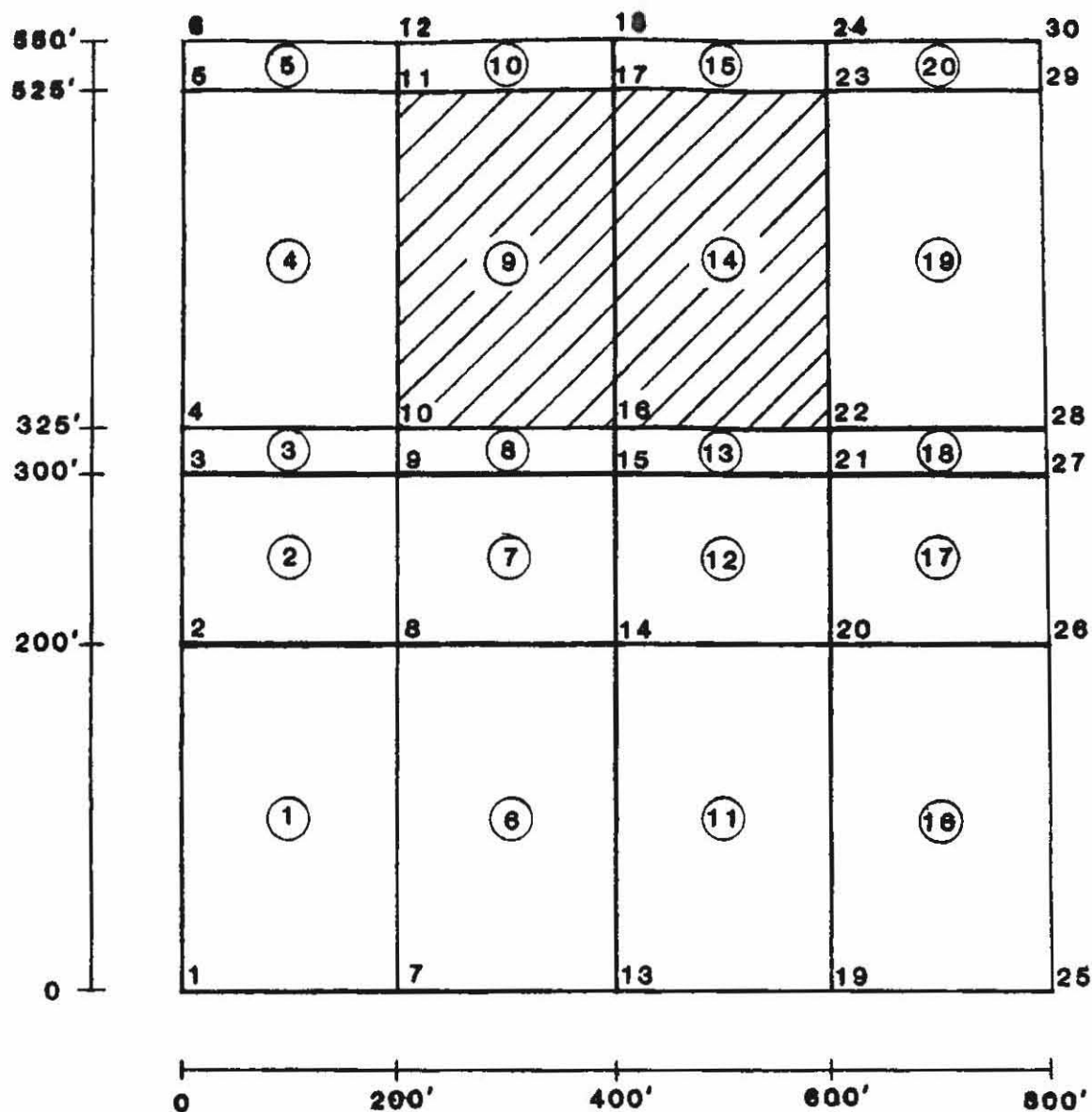
In designing the conceptual hydrogeological situation, a number of factors were considered to create a scenario which would be representative

of the various hydrogeological settings within the State of Connecticut, specifically southeastern Connecticut. Additionally, the capabilities and limitations of the model itself had to be considered. The principal criteria for selection of the various input parameters of the model was to create a worst case situation.

In inputting to the computer the conceptual design of the selected hydrogeologic scenario, a grid system is constructed in the x-y plane, Figure 5-3. The grid describes the scenario by specific nodes and elements. Nodes are points at the intersection of two lines whereas elements are defined by and surrounded by intersecting lines.

The vertical component of the scenario is introduced by the identification of layers, Figure 5-4. This particular scenario was defined by three distinct layers with Layer 1 being ten (10) feet thick and Layers 2 and 3 having thicknesses of one (1) and nine (9) feet, respectively. The selection of thicknesses represent both a conscious design requirement and accommodations to the abilities and limitations of the model.

- o Layer 1 is identified as the aquifer of concern in which each node point essentially represents a monitoring well point where cyanide concentrations could be measured in a well field.
- o Layer 2 represents the designated cyanide source. As illustrated in both Figures 5-3 and 5-4, an area 200 feet by 400 feet was selected to input cyanide into the aquifer. The chosen dimensions are similar to the application area at the Ralph Gilbert Property discussed previously. It is important to note that the model requires the input of the source directly into the water bearing zone which is not the case at either of the investigated sites. Rather, the source is situated at some point above the saturated zone and is separated by varying thicknesses of unsaturated materials. This model however is unable to model the movement of a constituent through the unsaturated zone.



LEGEND

1 NODE NUMBER

① ELEMENT NUMBER

 CYANIDE SOURCE AREA



Scale: AS NOTED

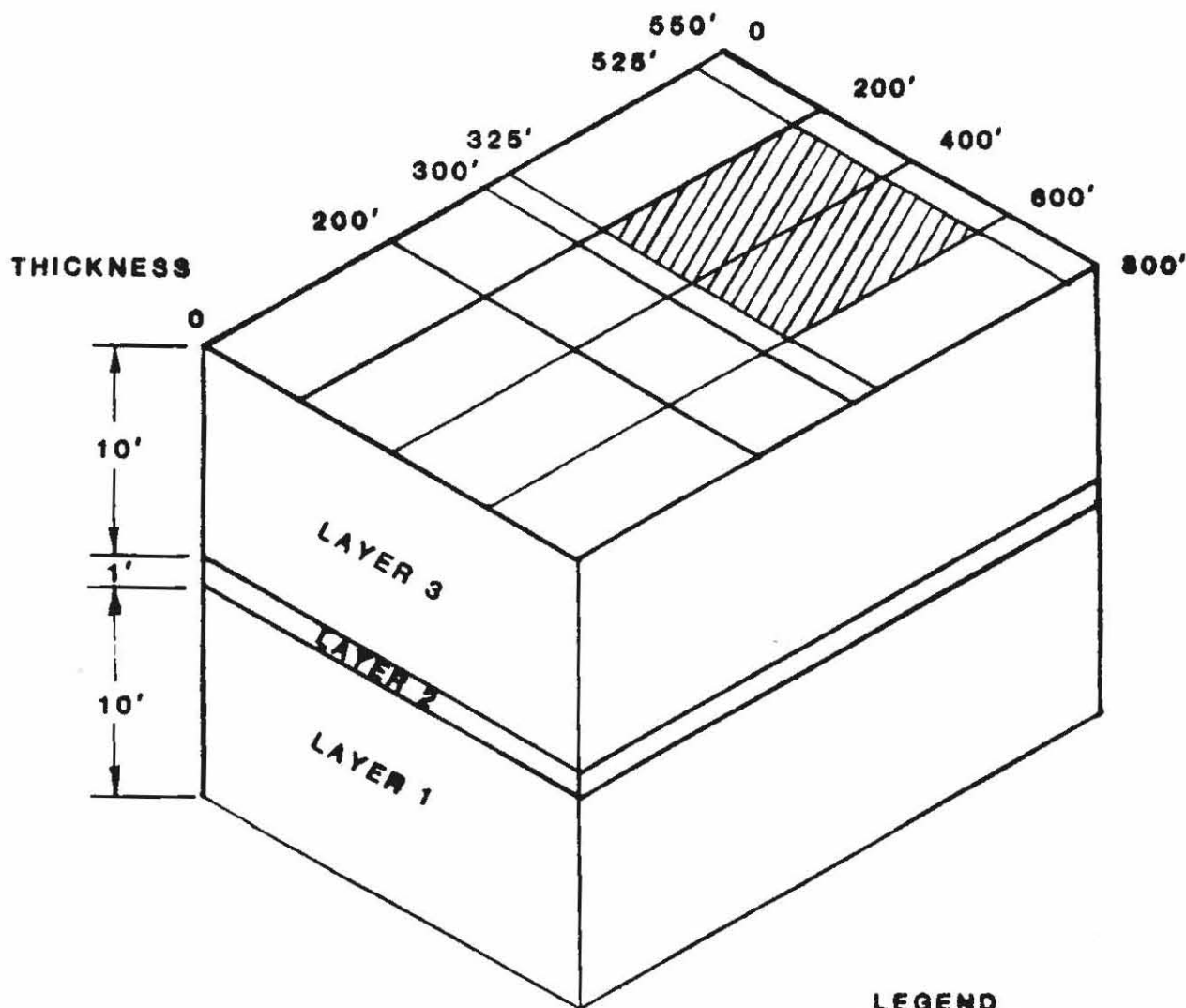
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NODAL AND ELEMENTAL
LAYOUT

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A FIGURE 5-3



LEGEND



CYANIDE SOURCE AREA



Scale: AS NOTED

By Date

Dwn. JCS/87

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Ap'vd.

Rev.

PFIZER, INC.
GROTON, CT.

Project No. 6C753313

CONCEPTUAL
SCENARIO
IN FEET

A

FIGURE 5-4

The one foot thickness was chosen to approximate the volume of the soil/mycelium mixtures which were utilized in conducting the field experimental studies. This thickness, however, actually represents a much larger available quantity of source than what was indicated in the field experimental studies.

- o Layer 3 is utilized as a "freeboard" for the model to accommodate an increasing thickness in the water table as a result of the precipitation and subsequent infiltration.

As with all models, a substantial quantity of data is required to describe the various natural phenomenon of convective transport, dispersion, and adsorption. The quality of any simulation is directly related to the quality of the input data. As a result of the hydrogeologic investigations and experimental studies, a substantial data base exists to serve as input to the model. The various parameters are identified in Table 5-5 along with the corresponding values utilized in performing the simulations. Brief discussions and justifications for the selected values are provided below.

- o Adsorption - based upon the results of the isotherm studies, a retardation factor or adsorption of cyanide to the soil material appears to range between zero to four. The simulations presented herein have considered zero adsorption to simulate the worst possible situation.
- o Molecular Diffusion Coefficient - values have been reported ranging from 1×10^{-10} m²/sec (1×10^{-5} ft²/day) for non-reactive chemical species in clayey geologic deposits (5). Values for coarse-grained unconsolidated materials may be greater than 1×10^{-10} m²/sec (1×10^{-4} ft²/day) but are less than the coefficients for chemical species in water, 2×10^{-9} m²/sec (2×10^{-3} ft²/day). The selection of 1.0×10^{-5} ft²/day (1×10^{-11} m²/sec) is a conservative selection to minimize source dilution by diffusion.
- o Net Infiltration - the value of 23.07 in/yr, as discussed previously, represents the amount of infiltration likely to occur on parcels of land with average slopes of two (2) percent. This quantity permits the maximum movement of the source into the groundwater regime.

TABLE 5-5
INPUT PARAMETERS AND SELECTED VALUES

Parameters	Value
Adsorption	0.0
Molecular Diffusion Coefficient	1.0×10^{-5} ft ² /day
Net Infiltration	23.07 inches/year
Nodal Hydraulic Conductivities (x,y,z direction)	0.28, 0.28, 0.28 ft/day
Average Porosity	0.30
LAYER 1:	
Hydraulic Conductivities (x,y,z direction)	2.8, 2.8, 2.8 ft/day
Specific Yield	0.21
Total Porosity	0.30
Longitudinal Dispersivity	50.0 feet
Transverse Dispersivity	6.66 feet
LAYER 2:	
Hydraulic Conductivities (x,y,z direction)	2.9, 2.9, 2.9 ft/day
Specific Yield	0.21
Total Porosity	0.30
Longitudinal Dispersivity	50.0 feet
Transverse Dispersivity	6.66 feet
LAYER 3:	
Hydraulic Conductivities (x,y,z direction)	2.8, 2.8, 2.8 ft/day
Specific Yield	0.21
Total Porosity	0.30
Longitudinal Dispersivity	50.0 feet
Transverse Dispersivity	6.66 feet

- o Nodal Hydraulic Conductivities. The hydraulic conductivity provided here represents the hydraulic conductivity in the x, y and z directions of the soil zone through which infiltration will occur down to the aquifer. The values selected, 0.28, 0.28, 0.28 ft/day (1×10^{-4} , 1×10^{-4} , 1×10^{-4} cm/sec), are an order of magnitude less than the values discussed for the water bearing zones discussed below. This reduction was made based upon the increased presence of silt and clay size particles which are typically present within the upper soil horizons.
- o Average Porosity - porosity of the upper soil horizons were assumed to be similar to the aquifer material. Justification for utilizing lower values may be warranted (6), however, to approach the simulations from a conservative standpoint, an identical value to that of the aquifer material appeared to be warranted.
- o Hydraulic Conductivities - the selected values for Layers 1 and 3 are representative of values which were obtained from the previously discussed field investigations (7,8). Hydraulic conductivities of 1×10^{-3} cm/sec (2.8 ft/day) are representative of alluvial/outwash deposit aquifers such as that observed at the Bond Sand and Gravel site. Lower hydraulic conductivities, 1×10^{-4} cm/sec (0.28 ft/day), are more representative of aquifers contained within till like material such as that observed at the Gilbert site. The need to perform simulations at both of these hydraulic conductivities did not appear necessary since hydraulic gradients within alluvial/outwash deposit aquifers are typically low, approximately 0.01, due to the depositional setting. Hydraulic gradients within till deposits on hillsides, however, typically have gradients at or approaching 0.10. In evaluating the overall velocity based upon the hydraulic gradient and the conductivities, the velocities in both cases are similar.

Layer 2 has a hydraulic conductivity value of 1.023×10^{-3} cm/sec (2.9 ft/day) in response to a limitation of the model. The model precludes the arbitrary division of a homogeneous isotropic material into separate layers. A slight increase in the hydraulic conductivity values of this layer was established to provide a discrete source layer. This parameter was selected since the values utilized have been determined by previous field work and since a slight increase in this value has minimal impact on the overall simulation.

As stated above, the hydrogeological scenario is considered to be a homogeneous isotropic aquifer. Consequently, hydraulic conductivities in the x, y and z direction are assumed to be identical. This assumption appears to be valid based upon constant permeameter tests which were performed on horizontal and vertical soil cores obtained at the Gilbert site (7).

- o Specific Yield - specific yield is based upon the relative size distribution of particles within the aquifer media. Field investigations (7,8) indicated that this material test approximated a textural classification of fine sand. Reported values for this consistency range from 10 to 28 percent with an average of 21 percent (6). Consequently, the average value of 21 percent was selected for each of the layers.
- o Total Porosity - total porosity represents the total pore volume of the aquifer medium relative to the volume of the medium. Reported values for mixed sand and gravel range from 20 to 35 percent (6). Since total porosity by definition must be greater than the specific yield, a value of 30 percent was selected for each of the layers.
- o Longitudinal and Transverse Dispersivity - dispersivity is a poorly understood property and a wide range of values have been reported within the current literature for values of longitudinal and transverse dispersivity (5,9). Laboratory experiments in granular materials have yielded longitudinal values typically in the range of 0.00001 to 0.06m. Corresponding transverse values are usually 0.05 to 0.2 of longitudinal dispersivity.

Field experiments in sands and gravels have yielded values of longitudinal dispersivity which are typically two to six times larger than laboratory determined values (9). Horizontal transverse-dispersivity values appear to be about 0.05 to 0.17 of longitudinal dispersivity.

Longitudinal dispersivity values which have been used with solute transport models commonly range from 30 to 100m (4,5,9). There is little physical evidence to substantiate these large values other than that, with their use, the models compute solute concentrations which compare favorably with field data.

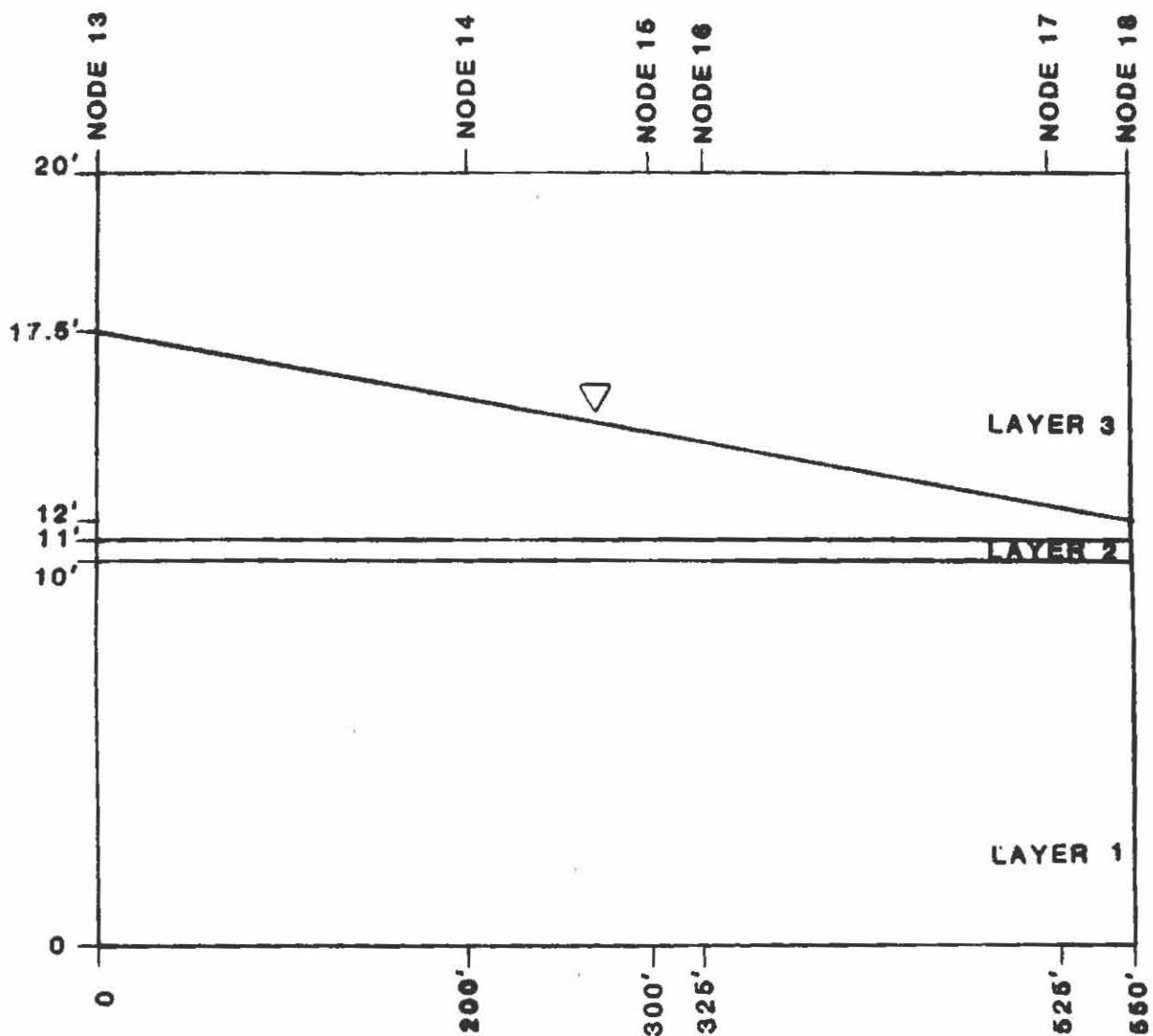
Prior to selecting a value to utilize within the simulations, the designers of the model were consulted to obtain their opinion relative to appropriate values based upon their experience relative to the aquifer media in question (10). The recommended range for longitudinal dispersivity is from 10 ft (3m) to 100 ft (30m) with transverse dispersivity ranging from 0.1 to 0.2 of the longitudinal value. For purposes of these simulations, a longitudinal value of 50 feet with a corresponding transverse dispersivity of 6.66 feet was selected. These values represent approximate mid-range values for each of these parameters.

In addition to the above data input, a number of variables which dictate the presence and quantity of constant head and/or concentration nodes, time steps, print out controls, convergence criteria, and other options represent the principal input file referred to as TRIAL.IN, Appendix D.

Separate from the main input file, TRIAL.IN, two other input files are required to perform the desired simulation. The first of these files, INITHD.IN, establishes initial hydraulic condition by inputting static water levels at each of the model points. To achieve the desired simulation, a hydraulic gradient of 0.01 was imposed over the scenario by establishing the water level at the downgradient edge at twelve feet. The model requires that all model points within each layer contain some volume of water within the layer. Consequently, this saturated thickness was chosen to provide a minimum amount of water within Layer 3. The resultant water table, Figure 5-5, was calculated and inputted for each node point, Appendix E.

To maintain the desired hydraulic gradient and in turn groundwater velocity, it is necessary to identify the next upgradient nodes as constant head nodes. Establishing these nodes, 6, 12, 18, 24, and 30, as constant head nodes provides a source of inflow which maintains, throughout the length of the simulation, the desired gradient. As mentioned previously, the actual inputting of the quantity of constant head nodes and their location is actually done within the TRIAL.IN file.

The second file, INITCC.IN (Appendix F), provide concentration inputs for each layer by node points. In the two simulations which were performed and discussed below, one simulation introduced a quantity of 0.8 mg/l of cyanide as a slug at each of the six nodes, 10, 11, 16, 17, 22, and 23, within Layer 2 which defines the source area. The second simulation introduces a similar concentration at the same location however the assumption is made that a basal concentration of 0.08 mg/l is already present throughout the saturated zone.



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PFIZER, INC.
GROTON, CT.

INITIAL
STATIC WATER
LEVELS

Project No. 6C753313

A

FIGURE 5-5

The selection of 0.8 and 0.08 mg/l are based upon the findings of the experimental field studies, Section 3.2. The peak concentration of cyanide observed leaching from a 33% mycelium/soil mixture by weight was 0.8 mg/l. This value has been utilized as the slug source. As mentioned earlier, this is a worst case assumption since the model inputs this concentration directly into the water table whereas in actuality, this slug, if present, must first infiltrate through the unsaturated zone and is likely to reach the water table at some concentration less than the 0.8 mg/l slug.

The same mycelium/soil mixture with time displayed a basal level of 0.78 mg/l of cyanide which continued to leach from the material. Working with the same assumption that this basal level, defined as 0.08 mg/l rather than 0.078 mg/l for the simulation, was introduced throughout the aquifer, i.e. potentially representative of continuous introduction of cyanide from a previous year's application of mycelium, the simulation then introduces a second slug of 0.8 mg/l of cyanide into the aquifer.

In performing these simulations, the computer produces these output files which are referred to as TRIAL.OUT, TRIAL.LCC, and TRIAL.LHD. TRIAL.OUT is the principal output file which summarizes the input data and provides data relative to the equilibration of the water table as a result of precipitation/infiltration and constant head nodes. TRIAL.LCC contains concentrations per node by layer and represents the results of the chemical transport equations. TRIAL.LHD provides the static water levels for each of the nodes by layer.

The results of Simulation 1, introduction of a cyanide slug of 0.8 mg/l is contained in Appendix G. Examination of the output files indicate

cyanide concentration in the aquifer of concern, which do not exceed 0.02 mg/l during the course of one year after the introduction of the slug. Figures 5-6 to 5-12 graphically depict the concentration observed by month for each layer along a line which bisects the cyanide source area, i.e. Nodes 13, 14, 15, 16, 17, and 18 (Figure 5-3). This line displays the greatest concentrations due to minimizing dilution of cyanide as a result of dispersion.

Due to the nature of the mathematics involved in performing these simulations, the model creates a Time Step 0, Figure 5-6, which represents the model calculated static state of the inputted hydrogeologic scenario. Two principal actions are involved in producing this static state condition. The first action involves equilibrating the water table to reflect the effect of precipitation/infiltration which results in a subsequent rise in the water table relative to the water table which had been described in the INITHD.IN file. For this simulation, that increase represents an increase of approximately 0.20 to 0.26 feet throughout the hydrogeologic scenario.

The second action involves a distribution of the cyanide mass relative to the mathematical matrices which are employed in solving the chemical transport equations. This results in a significant reduction in the point source concentration, 0.8 mg/l to approximately 0.118 to 0.131 mg/l in Layer 2, and the distribution of cyanide to a number of nodes throughout the layers, Figure 5-6

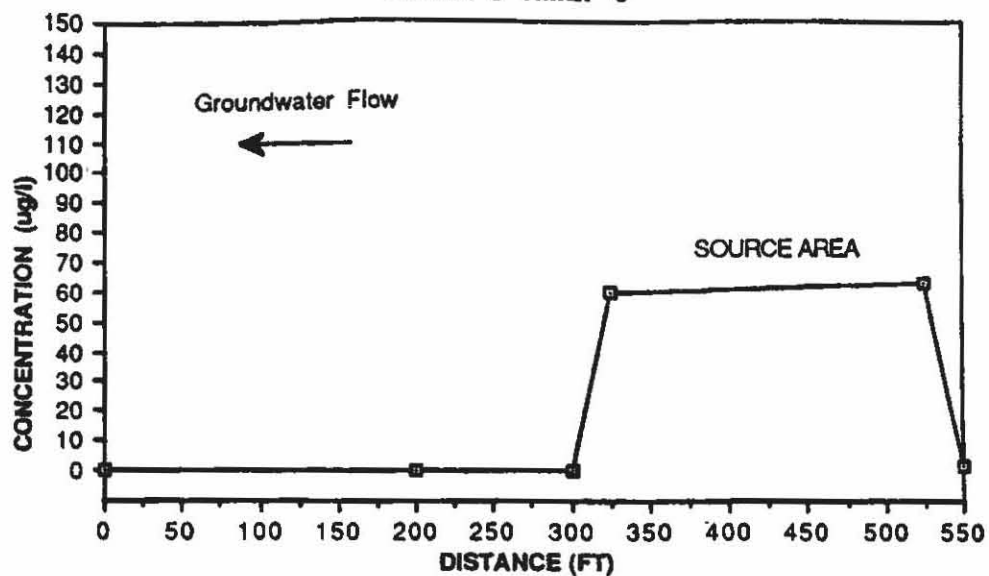
Over the course of the first year, Figures 5-7 to 5-12, the transport of cyanide through the saturated zone is observed to move away from the source area. Cyanide concentrations decrease with time due to the influx

of groundwater from upgradient of the source area and precipitation/infiltration which dilutes the cyanide concentrations.

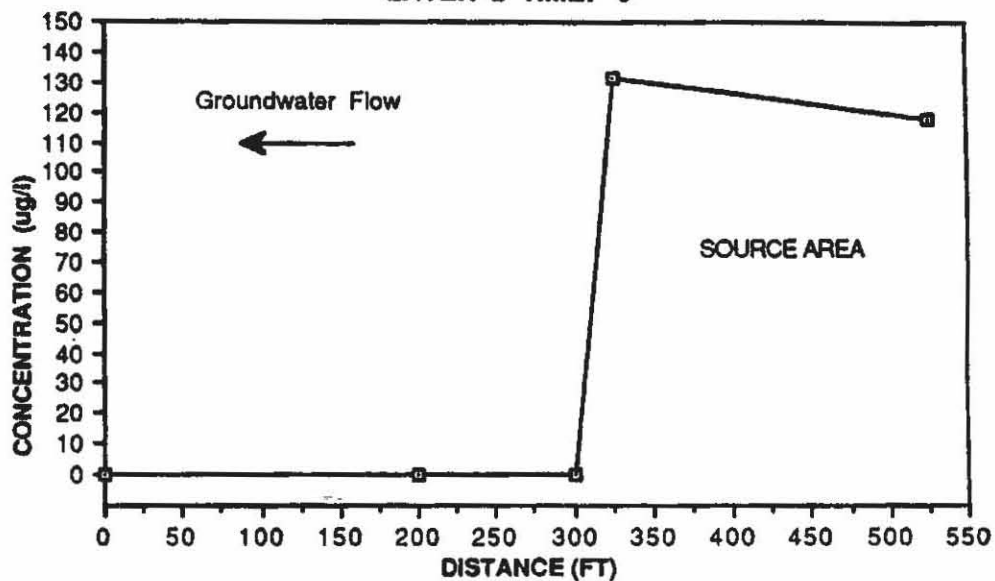
Simulation 2, introduction of a cyanide slug of 0.8 mg/l into an aquifer with background levels of 0.08 mg/l cyanide, is contained in Appendix H. Time Step 0 displays an identical increase in the static water levels as discussed above and a similar reduction of the cyanide source as observed in Simulation 1. The 0.8 mg/l source is reduced to 0.196 to 0.209 mg/l with an accompanied distribution of cyanide to other nodes throughout the layer. Within the aquifer of concern, cyanide concentrations do not exceed 0.084 mg/l through the course of the year. By the end of the one year, all nodal points have returned to a near basal level.

FIGURE 5-6
Total Cyanide Concentration vs. Distance Along Center Line

LAYER 3 TIME: 0



LAYER 2 TIME: 0



LAYER 1 TIME: 0

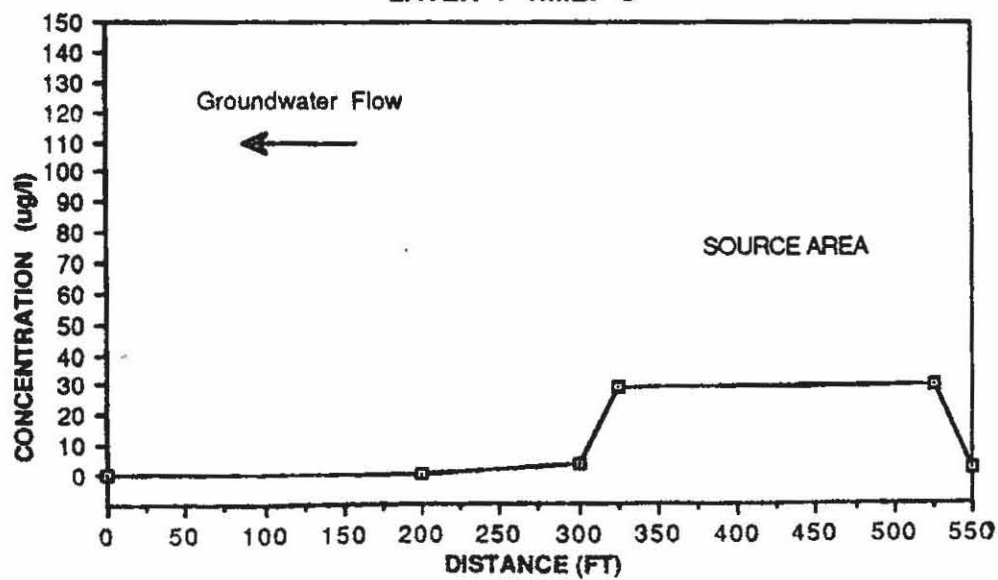


Figure 5-7
Total Cyanide Concentration vs. Distance Along Center Line
LAYER 3 TIME: 1 MONTH

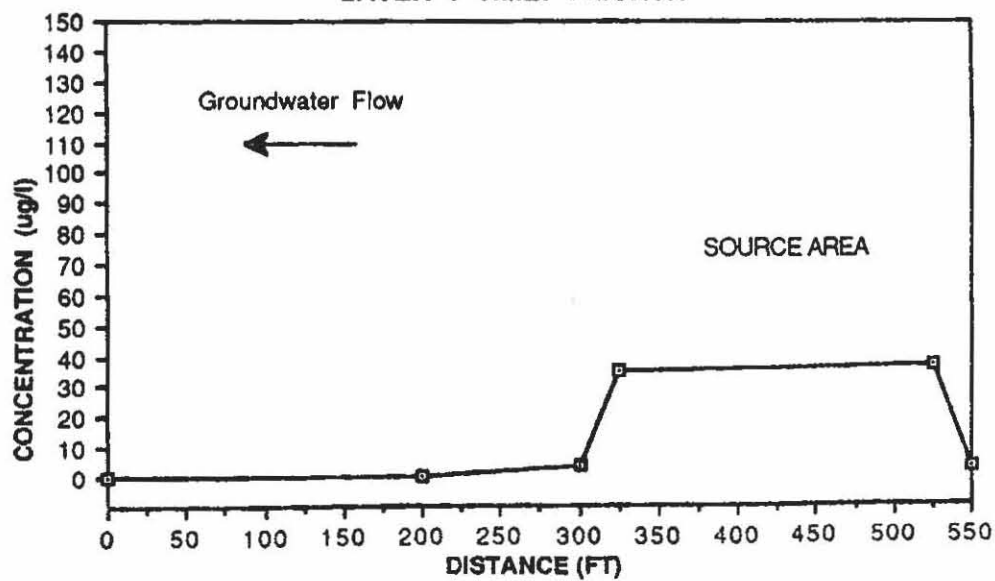
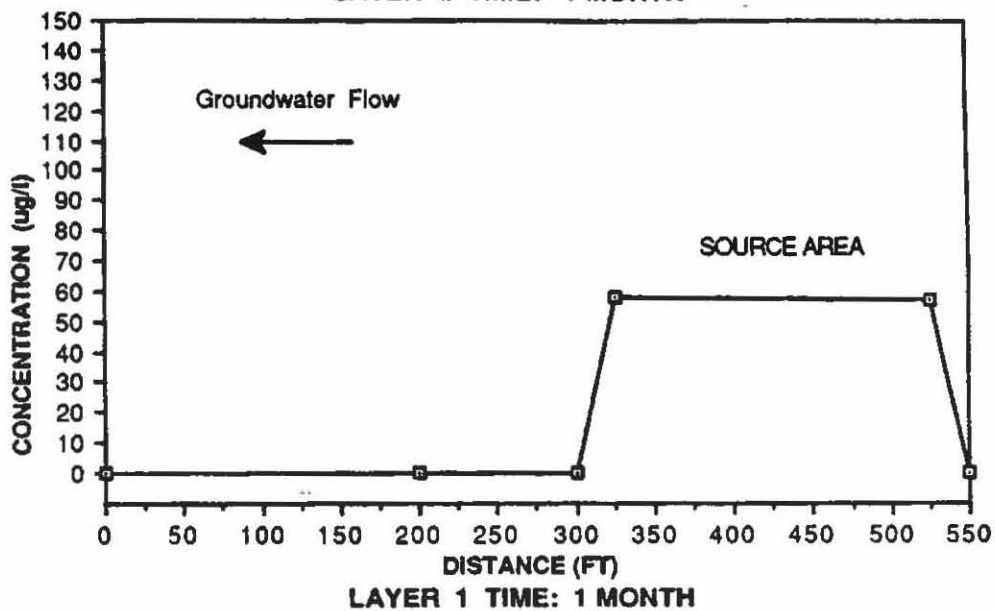
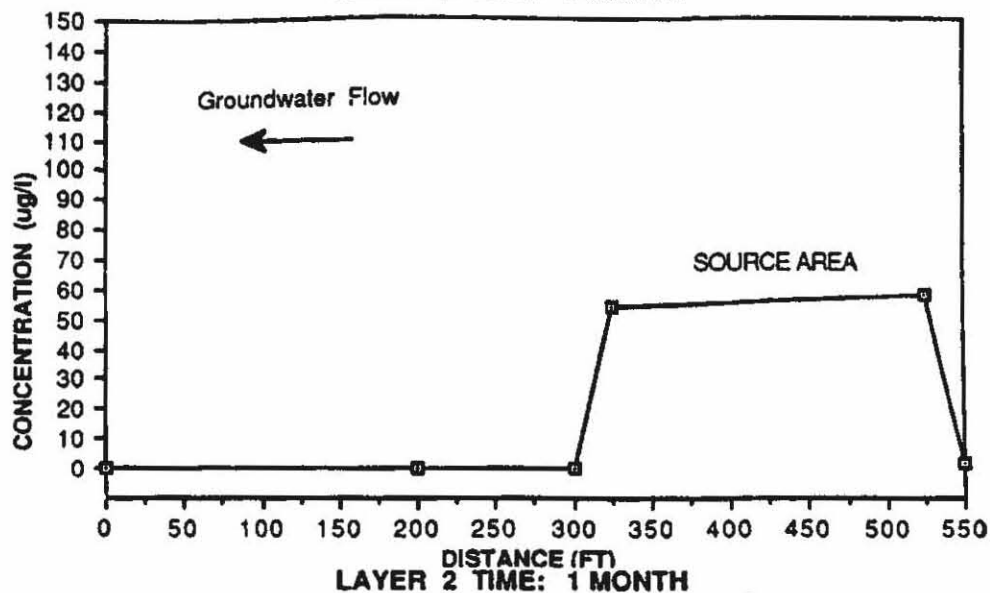


FIGURE 5-8
Total Cyanide Concentration vs. Distance Along Center Line
LAYER 3 TIME: 2 MONTH

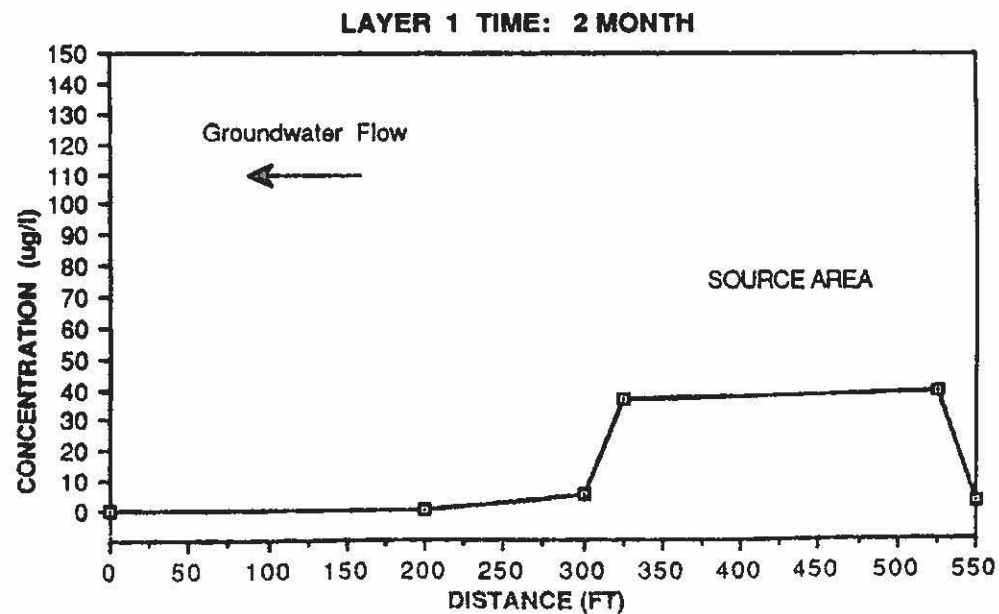
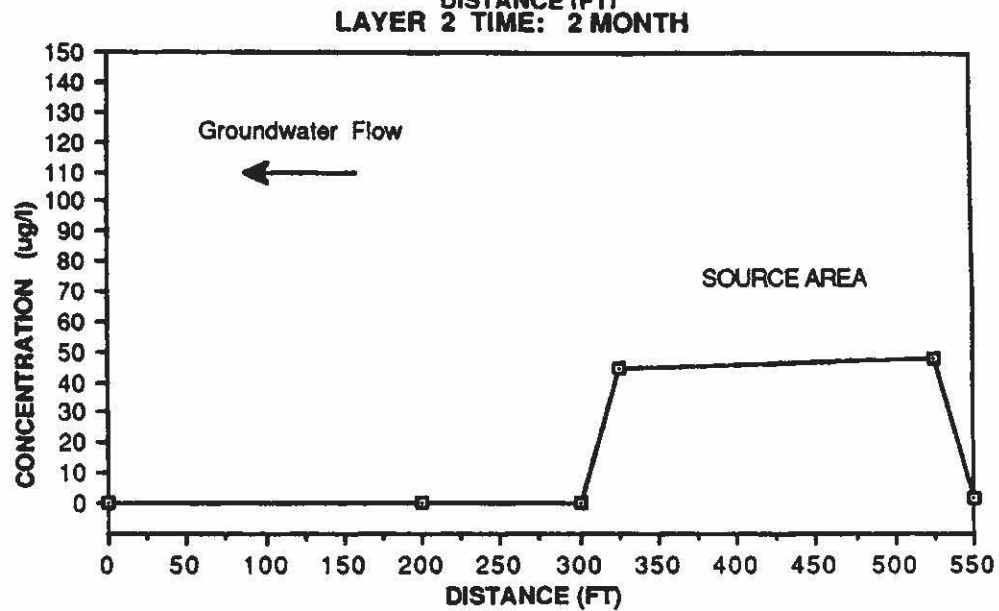
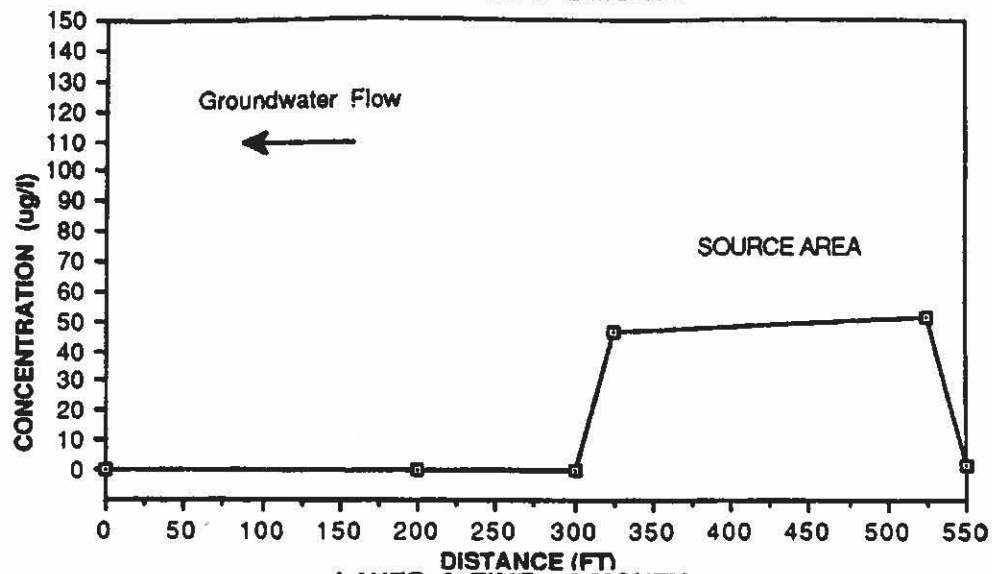
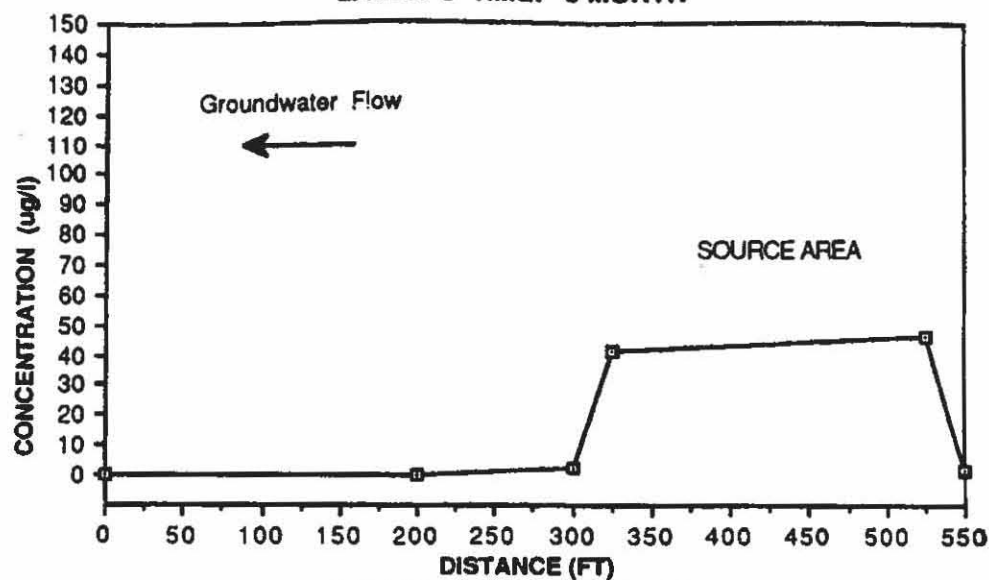
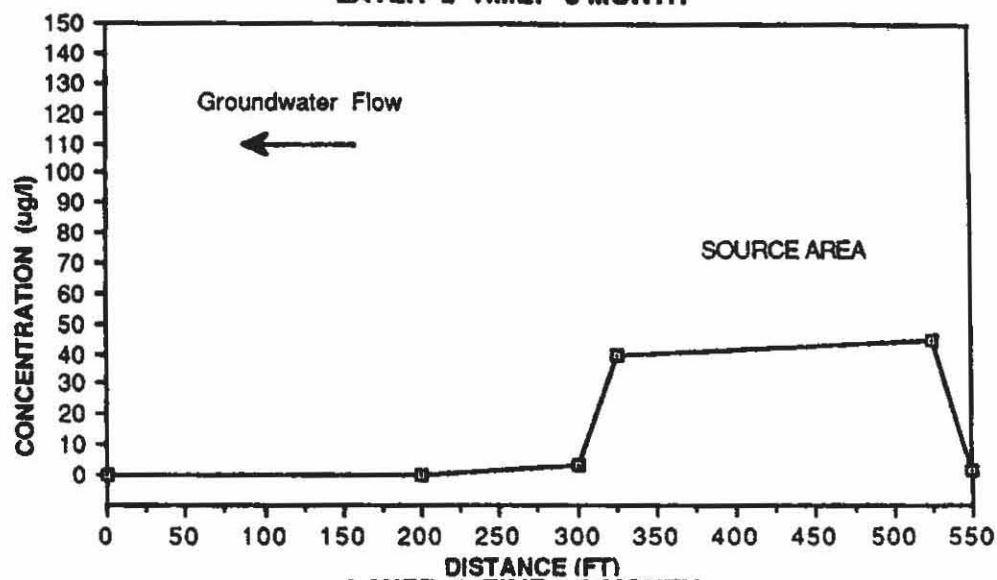


FIGURE 5-9
Total Cyanide Concentration vs. Distance Along Center Line
LAYER 3 TIME: 3 MONTH



LAYER 2 TIME: 3 MONTH



LAYER 1 TIME: 3 MONTH

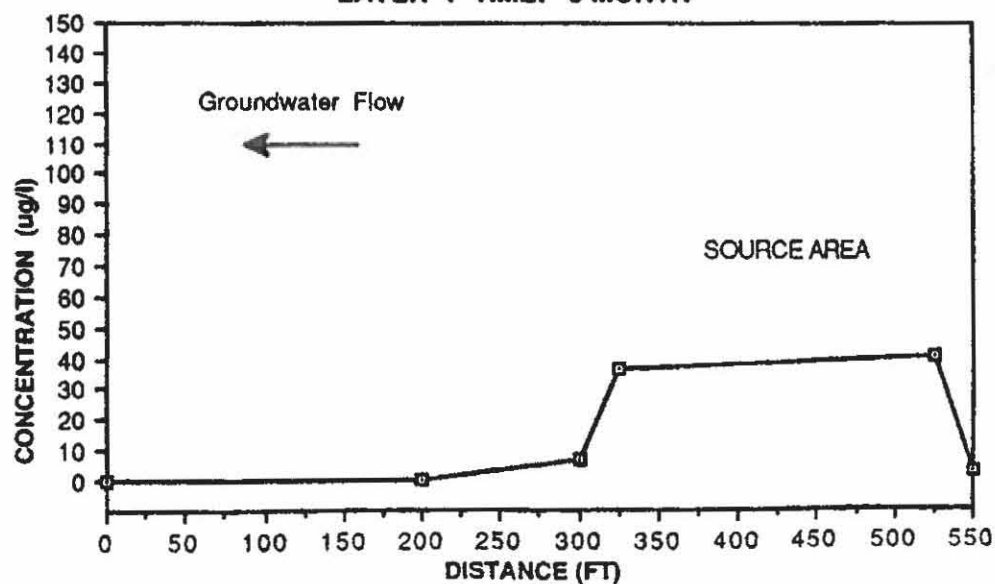
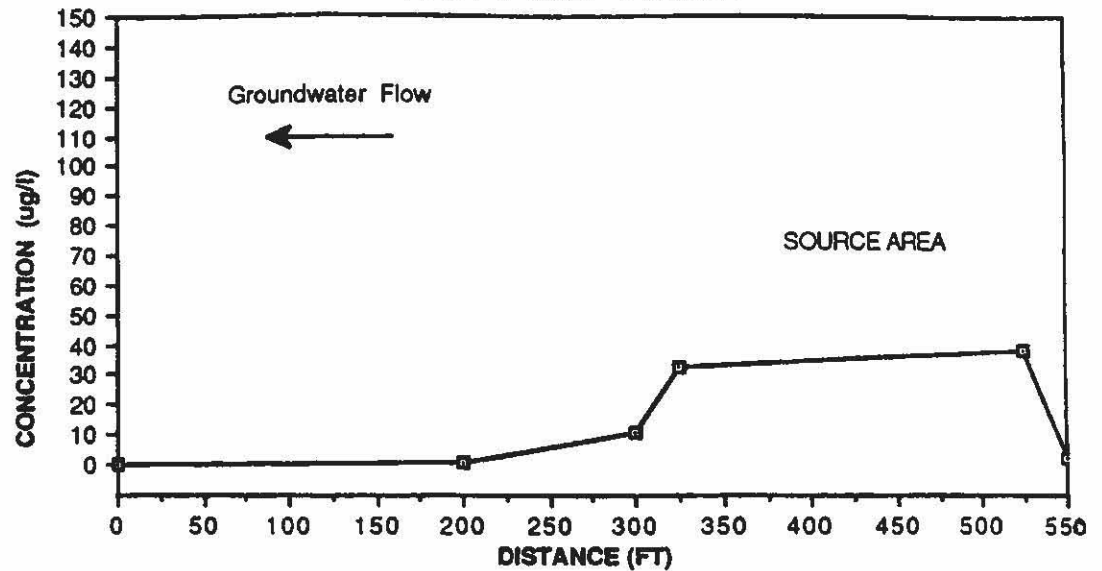
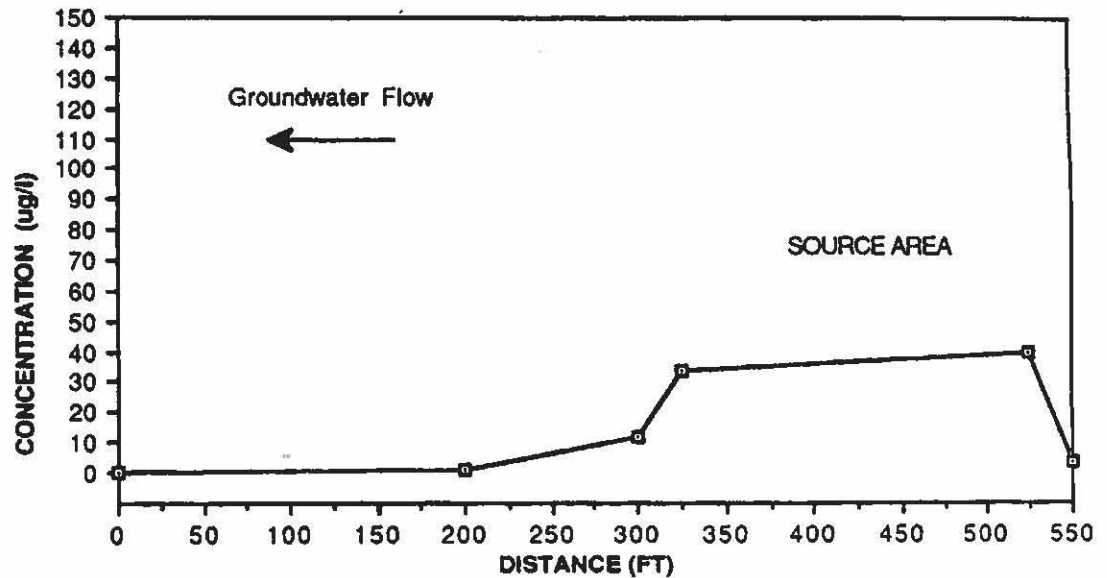


FIGURE 5-10
Total Cyanide Concentration vs. Distance Along Center Line

LAYER 3 TIME: 6 MONTH



LAYER 2 TIME: 6 MONTH



LAYER 1 TIME: 6 MONTH

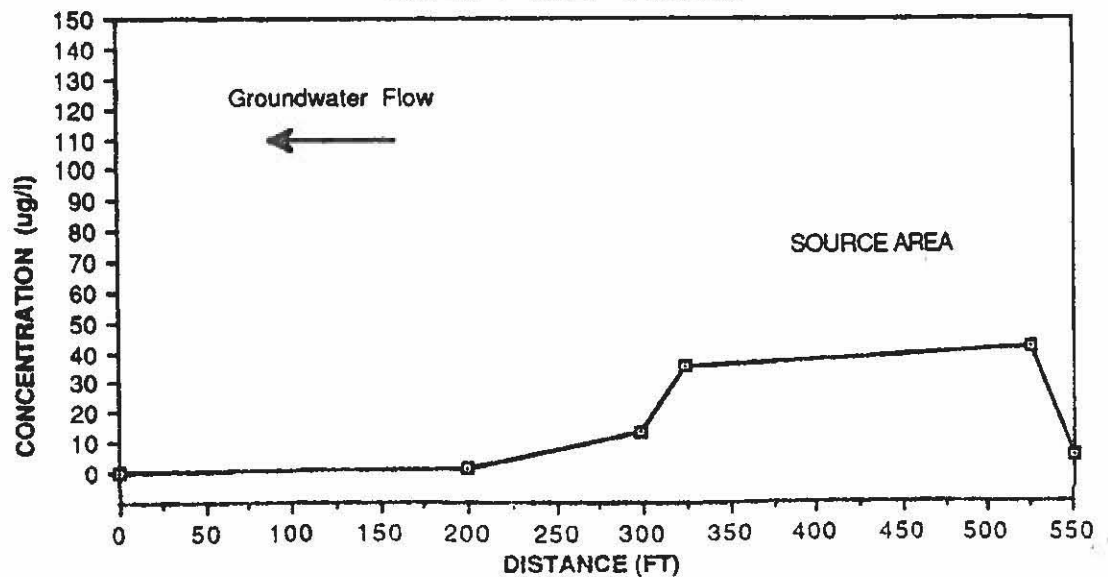


FIGURE 5-11
Total Cyanide Concentration vs. Distance Along Center Line
LAYER 3 TIME: 9 MONTHS

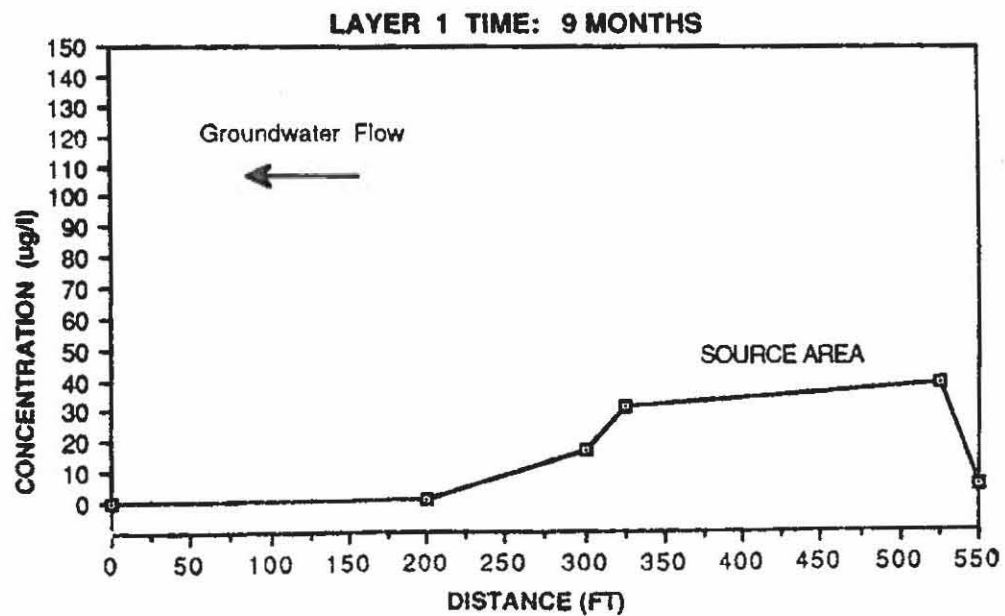
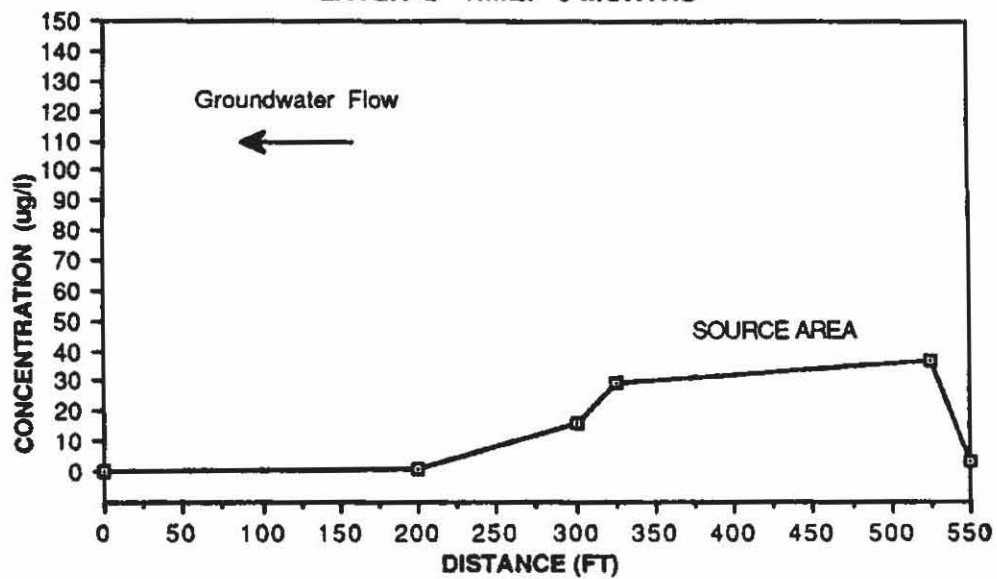
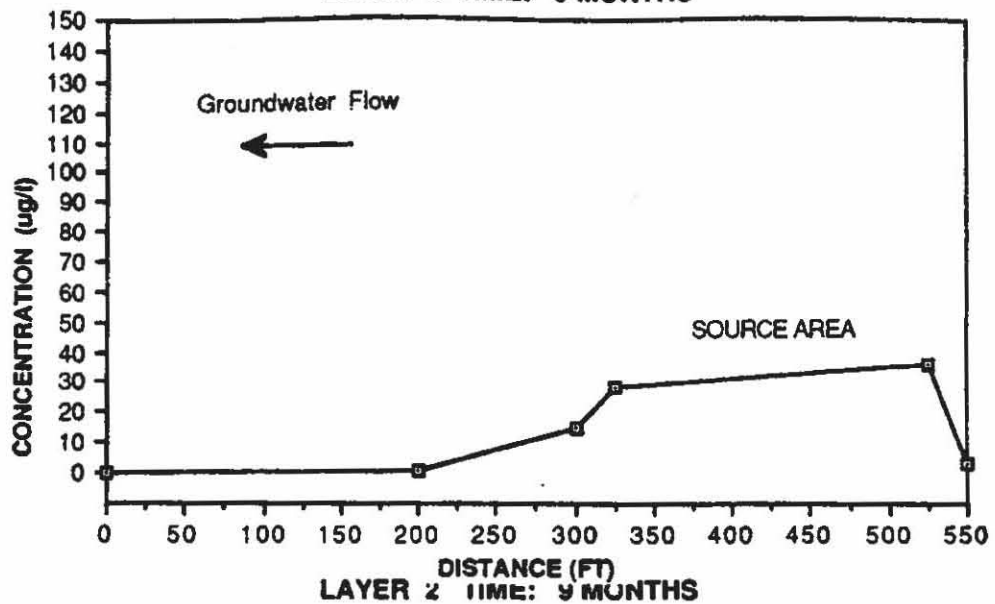
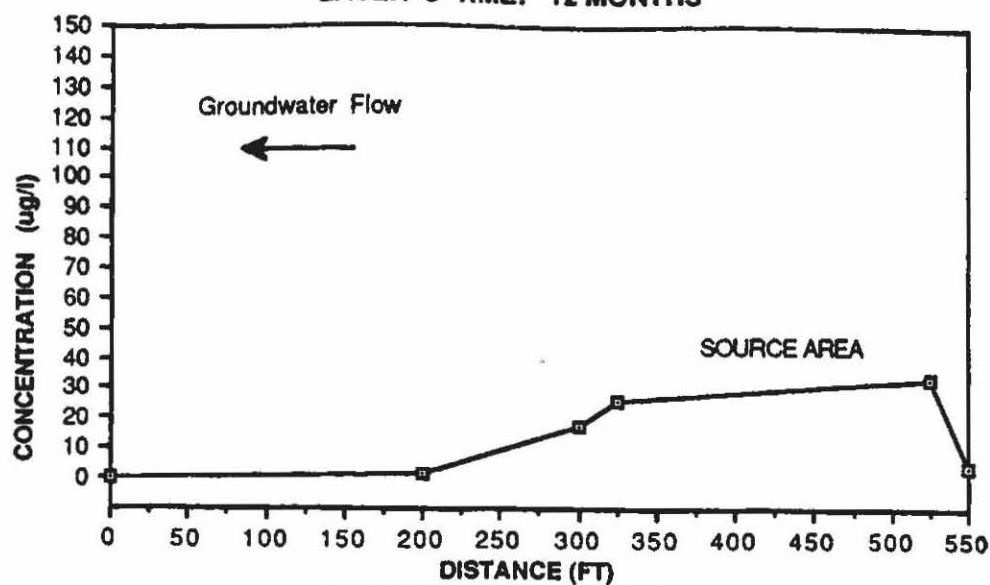
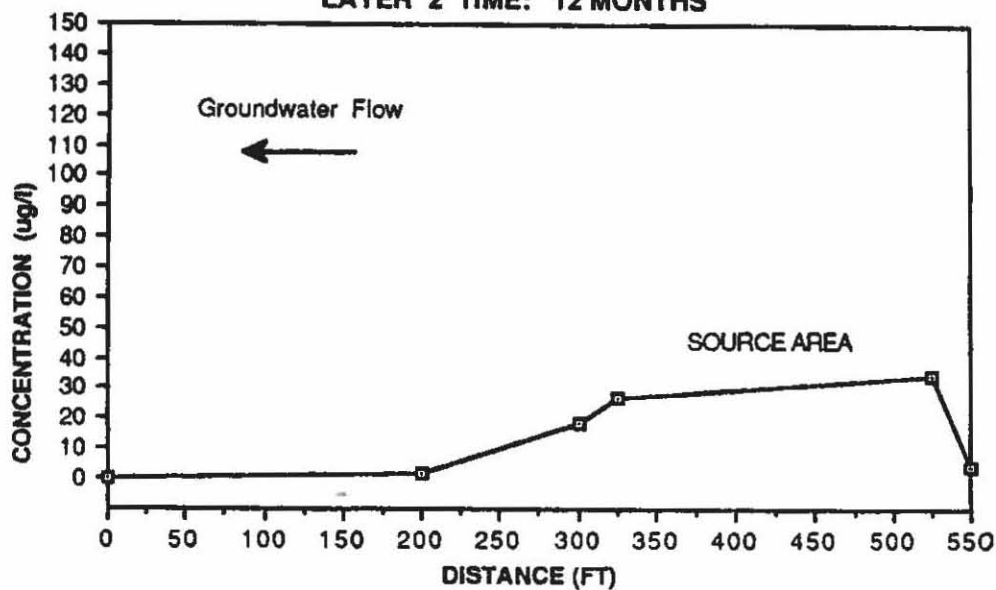


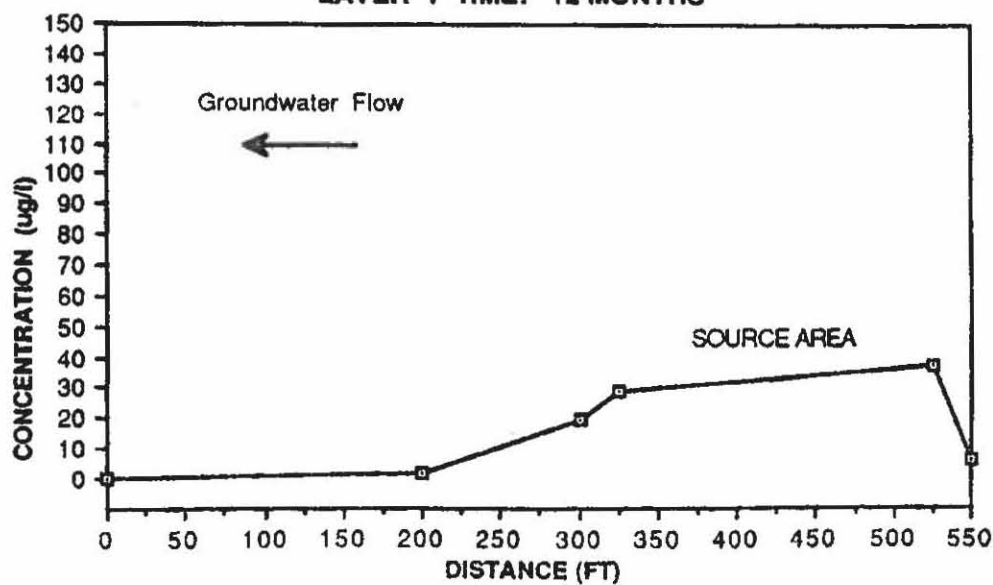
FIGURE 5-12
Total Cyanide Concentration vs. Distance Along Center Line
LAYER 3 TIME: 12 MONTHS



LAYER 2 TIME: 12 MONTHS



LAYER 1 TIME: 12 MONTHS



SECTION 5.0 REFERENCES

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6.0 ENVIRONMENTAL ASSESSMENT

6.1 Overview

The Pfizer by-product mycelium is currently utilized in the environment in one of three principal fashions: 1) landspread/reclamation activities, 2) stockpiling, or 3) soil additive in agricultural activities. Two mycelium application sites judged to be the most environmentally sensitive based on a systematic scoring procedure were selected for investigation. Both sites had received considerable quantities of mycelium over the years and both sites ranked as highly sensitive in large part because they were located close to a surface water body (Beckwith Pond) that serves as an emergency source for a public water supply system and because the sites were separated from the underlying groundwater by a minimum thickness of unsaturated materials. One site, the Gilbert Property, utilized landspreading as the application method; whereas mycelium was stockpiled at the second site, Bond Sand and Gravel.

In addition to utilizing different application methods, the sites are situated on different unconsolidated surficial geologic deposits. The landspread application site is underlain by till which is used to some degree as a source of potable water within southeastern Connecticut. The stockpile site is underlain by glacial outwash; i.e., sand and gravel, which is used more extensively as a source of potable water and is typically a more productive aquifer than the till material.

The selected sites are believed to be highly representative of the typical subsurface conditions and hydrogeologic conditions which are believed

to be present at the remaining 186 sites. The findings of the hydrogeological studies conducted at these two sites provide a database which, as discussed in Section 5.0, permits the assessment of the results of mycelium application practices at these sites to be extrapolated to the remaining 186 sites.

The following discussion provides a brief summary of information on cyanide toxicity, health advisories developed by the U.S. Environmental Protection Agency and regulatory limits for cyanide in groundwater and drinking water, all of which served as reference points for the evaluation of health effects of current mycelium application practices. A more detailed discussion of these items can be found in Section 2.0. This is followed by a brief review of the hydrogeological investigation which is discussed in more detail in Section 4.0. A discussion of the findings of the hydrogeological investigation is then provided. This discussion reviews the detectable releases that were observed, if any, in the surface water, sediments, soils and groundwater of the sites and evaluates this data relative to environmental and human health considerations.

6.2 Background Summary

The acute toxic effects of cyanide compounds are believed to be due almost entirely to "free cyanide" which consists of hydrogen cyanide, the cyanide ion and cyanide compounds that readily dissociate to liberate these cyanide species. Stable complex cyanides such as ferrocyanide, which is believed to be the principal cyanide compound present in mycelium, are much less toxic.

Simply put, cyanide exerts its toxic effect by blocking the conversion of energy derived from the metabolism of food compounds into high energy chemical compounds required by the body to sustain life. Cyanide accomplishes this by binding to and thereby inactivating the enzyme, cytochrome oxidase, which is principally responsible for synthesizing the high energy compounds.

Fortunately, the body has defense mechanisms that metabolize cyanide to the much less toxic compound thiocyanate, which can then be excreted before the cyanide can exert its toxic effects. It is only when the dosage of cyanide overwhelms the defense mechanisms that its toxic effects are observed. Smaller doses are routinely metabolized and excreted; for example, tobacco smoke contains cyanide and its metabolite, thiocyanate, can usually be found in smokers' blood, however smokers do not typically exhibit symptoms of cyanide toxicity.

This information leads to the conclusion that there exists some small dosage level of cyanide that produces no observable adverse effects. There is a considerable body of scientific literature on the toxicity of cyanide. After carefully reviewing this literature, the U.S.E.P.A. Office of Drinking Water has identified cyanide concentrations in drinking water, which if not exceeded, would not be expected to produce any adverse effects. These concentrations, known as health advisories, are 750 $\mu\text{g CN/l}$ for a 70 Kg adult and 220 $\mu\text{g CN/l}$ for a 10 Kg child. These concentrations are based on dosages that produced no observable adverse effects in animal studies and include a safety factor of 500, which is the standard procedure when extrapolating from animal studies to

human toxicity. When the same calculations, including the 500 fold safety factor, are used to estimate the "no effect" levels for ferrocyanide based on an animal feeding study, concentrations of 1060 $\mu\text{g CN/l}$ for a 70 Kg adult and 330 $\mu\text{g CN/l}$ for a 10 Kg child are obtained.

Connecticut groundwater classification and drinking water regulations place the maximum allowable cyanide concentration in both drinking water source water and finished drinking water at 200 $\mu\text{g CN/l}$, which is slightly lower than the lowest U.S.E.P.A. Office of Drinking Water health advisory for cyanide.

6.3 Findings of the Hydrogeological Site Investigation

Samples of surface water, groundwater, soils and stream sediments were collected in the course of the site investigations and analyzed for cyanide and zinc, which were the only constituents of concern identified in mycelium in an earlier extensive mycelium characterization study. Zinc was either not detected or was at or below natural environmental background concentrations in all of the mycelium application site samples analyzed therefore the zinc in mycelium was deemed to have no environmental or human health impacts.

Two types of cyanide were measured in the samples collected: free cyanide, which includes the cyanide species almost entirely responsible for cyanide's toxicity, and total cyanide, which includes the more stable, less toxic complex cyanides as well as the free cyanides. When cyanide was detected in samples from the two mycelium application sites, it was generally predominantly the less toxic complex cyanide form.

Since ferrocyanide, a stable complex cyanide, is the form of cyanide used in the fermentation processes producing the mycelium, finding predominantly complex cyanide at the mycelium application sites would be expected.

6.3.1 Surface Waters

Both total and free cyanide were detected in a number of soil, stream sediment and groundwater samples from both mycelium application sites, however cyanide was detected in only one surface water sample. That sample was collected from near the bottom of the small pond at the Bond property. Since this sample was collected from near the bottom, there is a possibility that some cyanide containing sediment could have been stirred up during the collection process and gotten into this sample. This pond is also believed to be in direct hydraulic communication with the groundwater adjacent to the pond. Quantities of mycelium had been stockpiled in mounds very close to this pond and the groundwater underlying the mycelium mound and in contact with the surface water in the small pond also contained cyanide. Therefore, the cyanide detected in the bottom of the water column in the small pond may have entered the pond in groundwater.

Ferrocyanide in surface waters can be decomposed fairly quickly by sunlight to free cyanide which in turn can be lost from the water as a result of volatilization. Ferrocyanide entering the bottom of the pond in groundwater would have had a minimal opportunity to break down and leave the pond via these mechanisms. The near surface sample from the same pond was free of cyanide indicating that either the cyanide in the

near bottom sample was associated with resuspended sediment or that soluble ferrocyanide entering the surface water is fairly quickly and efficiently removed from the water column by photodegradation and volatilization. These ferrocyanide breakdown and removal mechanisms have been documented in surface waters in several independent studies. Based on the results of the two site investigations, the soluble cyanide contamination of or transport in surface waters does not appear to occur to a measurable extent.

Minor concentrations of cyanide, at most a few times the detection limit, were found in sediment samples from streams draining the two mycelium application sites. This indicates some degree of bedload transport of cyanide bound to particles in the streams, most likely consisting of soil or mycelium particles washed into the streams from the application sites by surface runoff. The greatest bedload transport distance for mycelium derived cyanide appears to have been about 800 feet. It is worth noting that if any particle bound cyanide ever did reach a public drinking water source, it would be readily removed by routine filtration.

The lack of any significant contamination of surface waters by either soluble or suspended cyanide from these two sites is reassuring particularly since the proximity of these sites to public water supplies was a major reason for them being ranked as among the most potentially environmentally sensitive. Additionally, the absence of soluble cyanide within the surface waters would indicate that no potential impact to aquatic organisms is likely to exist.

Based on the results of the site investigation studies, then, the current mycelium application practices do not appear to pose a risk to the environment or human health as a result of surface water contamination by mycelium cyanide, even under the probable worst case conditions represented by the two sites investigated.

6.3.2 Soils

Cyanide was detected in many of the soil samples collected from both of the investigation sites. Generally cyanide concentrations were highest at the soil surface where mycelium was directly applied and near mycelium stockpiles where mycelium could have been washed off the stockpiles directly to the sampling points by runoff.

In the soil environment, cyanide is both produced and consumed by a variety of microorganisms and plants. Cyanide produced by bacteria appears to be at rather low levels, generally at low parts per billion concentrations in the growth media. Fungi produce higher cyanide concentrations with the highest reported value being 2,500 ppm.

A variety of microorganisms (bacteria, algae, phytoplankton, protozoa and yeast) and fungi can also degrade cyanide. Plants possess the ability to metabolize exogeneous HCN. Previous studies indicate that many crop plants thrive when cyanide or cyanogenic compounds are applied to the soil as fertilizers in concentrations up to several hundred parts per million. Overall, it appears that a number of mechanisms exist in the environment for not only production of cyanide but also its destruction.

In order to assess potential human health effects that could arise from the cyanide in the soil, potential routes of exposure and likely dosages to the human recipients must be considered. Only two routes of exposure to cyanide in soil appear to be possible. They are inhalation, which could occur by breathing cyanide containing dust, and ingestion which could involve either direct ingestion, such as a child eating cyanide containing soil, or hand to mouth or hand to food to mouth ingestion, which could result if an individual failed to wash his hands after handling mycelium or mycelium containing soils and before eating, drinking or smoking.

The next consideration is the quantity of soil or mycelium that would have to be inhaled or ingested for an exposure equivalent to the USEPA health advisory dosages to occur. The lowest health advisory for cyanide in drinking water was 220 $\mu\text{g CN/l}$. This concentration was for a 10 Kg child and was calculated assuming an average daily intake of one (1) liter of water for a total daily dosage of 220 $\mu\text{g CN}$. An extensive mycelium characterization study indicated that the average total cyanide concentration in mycelium was 95 $\mu\text{g CN/g}$ of mycelium. Therefore a 10 Kg child could inhale or ingest 2.3 g/per day of pure mycelium without exceeding the USEPA's no effect dosage which already includes a 500 fold safety factor. In farm applications, mycelium is typically applied to fields at a rate of 40 to 100 tons per acre which when worked into the soil is equivalent to a mixture containing 3.2 to 8% mycelium. A 10 Kg child could inhale or ingest 29 to 72 g or such a mixture per day without exceeding the USEPA no effect dosage of cyanide.

The USEPA health advisory for cyanide in drinking water for a 70 Kg adult was 750 $\mu\text{g CN/l}$ and assumed a daily drinking water intake of 2 liters which gives a no effect dosage of 1,500 $\mu\text{g CN/day}$ for an adult. This would be equivalent to inhaling or ingesting 15.8 g of pure mycelium or 200 to 500 g of typical soil/mycelium mixtures.

Inhalation of the quantities of pure mycelium or a soil/mycelium mixture that would contain a no effect dosage of cyanide is simply not realistic. Inhalation of much smaller quantities of dust alone would result in such respiratory irritation and coughing as to be self limiting long before a quantity of dust containing ^{more than} a no effect dosage of cyanide could be inhaled. Therefore there is essentially no possibility that an individual could receive a cyanide dosage in excess of the USEPA no effect level by inhaling cyanide containing mycelium or soil/mycelium dust.

Similarly it is virtually impossible that an adult would ingest a sufficient quantity of mycelium or soil/mycelium mixture to exceed the no effect dosage through hand to mouth or hand to food to mouth contact, nor is it likely that an adult would directly ingest such quantities.

Children do occasionally ingest non-food items. This behavior is known as pica, and has resulted in many cases of lead poisoning in children who ate paint chips containing lead. The quantity of pure mycelium (2.3g) that a 10 Kg child would have to consume to exceed the USEPA no effect dosage is not so large as to preclude such an occurrence. The no effect dosage calculation is based upon presumed daily consumption of the cited dosage and, as noted several times, the dosage does include a safety factor of 500. With these factors in mind it would appear that the possibi-

lity of a child experiencing an adverse health effect as a result of ingesting cyanide containing mycelium or a mycelium/soil mixture is, at worst, remote.

In light of the mechanisms which exist within nature for the production and destruction of cyanide and cyanogenic compounds and based on the foregoing review of the potential routes of exposure and dosages of cyanides that might be experienced by humans as a result of contact with cyanide containing mycelium or mycelium/soil mixtures at mycelium application sites, such contact does not appear to pose any significant risk to the environment or human health.

6.3.3 Groundwater

At the Bond site, total and free cyanide were detected in the groundwater collected from 2 out of 3 wells located within a few feet of the toes of various mycelium stockpile mounds. Total cyanide concentrations ranged from 40 to 91 $\mu\text{g CN/l}$. Two additional wells, one located upgradient and the other laterally from the mounds with respect to the groundwater flow direction, were free of cyanide.

At the Gilbert site, total and free cyanide were detected in groundwater collected from all three wells located downgradient from the field where the mycelium was applied. Total cyanide concentrations ranged from 30 to 76 $\mu\text{g CN/l}$ and free cyanide ranged from 16 to 28 $\mu\text{g CN/l}$. A fourth well with its recharge zone located upgradient from the mycelium treated field was free of cyanide. Water from the Gilbert residential well, which is a dug well that had had mycelium spread immediately around it, contained 15

$\mu\text{g/l}$ total cyanide and $11 \mu\text{g/l}$ free cyanide. These results indicate that some fraction of the mycelium cyanide is leachable from the mycelial mass and can migrate to the groundwater.

Since neither detailed histories of the mycelium handling, storage and land application practices at these sites, nor the initial concentrations of cyanide in the mycelium at the sites were known, the initial conditions that gave rise to the observed cyanide concentrations at the sites could not be determined. For this reason, experimental field studies were run in which well characterized soil/mycelium mixtures simulating both landspread and agricultural applications were exposed to the Connecticut environment. The cyanide concentrations in leachates from these samples, generated by rainfall, were determined in order to estimate the cyanide concentrations that might be expected in seepage entering the soil column from the mycelium application zone.

Leachate from the soil/mycelium mixture simulating a land reclamation site had an initial total cyanide concentration of $845 \mu\text{g/l}$ and an initial free cyanide concentration of $337 \mu\text{g/l}$. After about 30 days, these concentrations had declined to about $78 \mu\text{g/l}$ and $<10 \mu\text{g/l}$, respectively, and remained at those levels for the balance of the study (8 weeks). Leachate from the soil/mycelium mixture simulating an agricultural site had an initial total cyanide concentration of $284 \mu\text{g/l}$ and an initial free cyanide concentration of $95 \mu\text{g/l}$. These concentrations also declined to basal levels over a period of 30 days which, in this case, were $44 \mu\text{g/l}$ total cyanide and $<10 \mu\text{g/l}$ free cyanide. Assuming that the basal leach rates remain constant for the balance of the year, the

average leachate cyanide concentrations over the course of a year would be 112 $\mu\text{g/l}$ total and 15 $\mu\text{g/l}$ free cyanide for the soil/mycelium mixture simulating a land reclamation site, and 55 $\mu\text{g/l}$ total and <10 $\mu\text{g/l}$ free cyanide for the soil/mycelium mixture simulating an agricultural site.

The higher cyanide concentrations seen in the leachates immediately after the mycelium is placed in the environment last for only a brief period of time and represent a small fraction, less than 10 percent, of the total rainfall infiltration occurring during the course of a year. The forces of dilution, advection, dispersion and diffusion, which control the transport of contaminants in groundwater systems in addition to infiltration through the unsaturated zone, can be expected to rapidly dissipate the initial higher concentrations of cyanide that leach from the mycelium. This expectation was supported by the results of a groundwater transport model simulating the behavior of a slug of cyanide at 800 $\mu\text{g/l}$ in a volume of water representative of the initial leachate in a hydrogeologic setting typical of the mycelium application sites.

In considering the implications of the leachate concentrations on potential groundwater concentrations, and drinking water drawn from the groundwater, the construction of typical potable water wells must be taken into account. Drinking water wells are typically screened over a minimum interval of 10 feet, therefore water drawn from these wells would reflect the average composition of the water in at least ten vertical feet of the water column. Any fluctuations in contaminant concentrations more localized than that would tend to be averaged out in water drawn from a typical potable water well. Taking all these factors into con-

sideration, it appears that the average annual cyanide concentrations in leachates from the soil/mycelium mixtures are the highest concentrations that are ever likely to be found in groundwater near the respective types of mycelium application sites or in drinking water drawn from that groundwater.

These expectations are born out by the cyanide concentrations actually found in groundwater at the two sites investigated. These two sites received the largest total tonnages of mycelium of any of the 188 mycelium application sites in Connecticut and were selected for investigation because they represented the worst cases. Groundwater monitoring wells were placed within a few feet of mounds of stockpiled mycelium 12 feet high at the Bond site and within 25 feet downgradient of a field four hundred feet wide that had received heavy applications of mycelium year after year at the Gilbert site. These wells showed total cyanide concentrations of 93 and 76 $\mu\text{g/l}$, respectively. These concentrations are less than, but within, the range of the average annual cyanide concentration in the soil/mycelium mixture leachate simulating a land reclamation application. This suggests that the use of the average annual leachate concentration as an estimate of the highest concentration that might ever be seen in groundwater or drinking water is reasonable.

To summarize the groundwater results: the highest concentration of cyanide actually found in groundwater in the site investigation studies was 93 $\mu\text{g/l}$ total cyanide and this clearly represented a worst case situation. The highest cyanide concentration that might be seen in groundwater based on the concentration present in simulated mycelium

application site leachate, which would be the input to the unsaturated zone for infiltration to the groundwater system, was 112 µg/l total cyanide. Both of these concentrations are below the Connecticut regulatory limit of 200 µg/l for cyanide in public water supply source water and finished drinking water and the lowest EPA Office of Drinking Water Health Advisory of 220 µg/l for cyanide in drinking water to be consumed by a 10 Kg child. The EPA Health Advisory is the concentration which, if not exceeded, would be expected to produce no adverse health effects in the designated population. As noted earlier, the derivation of the Health Advisory concentration includes a 500 fold safety factor.

Once entered into the groundwater system, cyanide will remain until discharged either to a groundwater well or a surface water body. Based upon the above findings, discharge into a groundwater well will be at concentrations below levels of concern for human health consideration. Additionally, if discharged to a surface water body, the destruction of cyanide by photolysis and dilution into the surface water body will mitigate any concerns relative to the environment. Therefore, in light of the foregoing discussion, the current mycelium application practices do not appear to pose a significant risk to the environment or human health due to exposure to mycelium derived cyanide in the groundwater.

6.4 Conclusion

The results of the investigations described in this report indicated that the current mycelium application practices result in quantifiable releases of cyanide to the environment. However, careful review and consideration of the concentrations of cyanide released to the environment,

potential receptor organisms, both human and non-human, possible transport and exposure pathways, cyanide toxicity and the no effect levels established by the EPA failed to identify any significant risk of adverse effects to human health or the environment. Therefore, while the current mycelium application practices do result in measurable releases of cyanide to the environment, the releases do not appear to pose any significant risk of impairment to human health or the environment.

**RESPONSE OF PFIZER INC.
TO THE U.S. ENVIRONMENTAL PROTECTION AGENCY'S
REQUEST FOR INFORMATION, DATED OCTOBER 25, 2011 – NEWTOWN CREEK
SUPERFUND SITE, KINGS COUNTY AND QUEENS COUNTY, NEW YORK**

EXHIBIT 5

MATERIAL SAFETY DATA SHEET				MANUFACTURER/ADDRESS Food Science Group 205 East 42nd St. New York, NY 10017					
Product Identification	PRIZER PRODUCT NAME Mycelium Solids		PRIZER MSDS NO. M031	EMERGENCY PHONE (212) 573-2223	DATE 12 30 1994				
	CHEMICAL NAME AND MOLECULAR FORMULA Not applicable			CAS NO. (a) M02500001 None established (otherwise)					
	SYNONYMS Not applicable			CHEMICAL FAMILY Not established					
Hazardous Components	Materials or Components		%	Hazard Data (TLV, LD50, LC50, etc.)					
	None known above 0.1 %			Note: Mycelium solids may contain very trace amounts of some heavy metals, but all are much below 0.1 % in concentration.					
Product Identification	BOILING POINT (DEGREE F)	Not applicable		SPECIFIC GRAVITY (H2O = 1)	1.014 - 1.020				
	VAPOR PRESSURE (mm Hg.)	Not applicable		% VOLATILE BY VOLUME (%)	Not applicable				
	VAPOR DENSITY (Air = 1)	Not applicable		EVAPORATION RATE	Not known				
	SOLUBILITY IN WATER	Soluble - complete		pH 100 % SOLN	4.0 - 8.0				
	APPEARANCE & ODOR	Clear to amber, nutty odor							
Fire & Explosion Data	FLASH POINT (Method used) Not established			FLAMMABLE LIMITS	<table border="1"> <tr> <td>LeI</td> <td>UeI</td> </tr> <tr> <td>N/A</td> <td>N/A</td> </tr> </table>	LeI	UeI	N/A	N/A
	LeI	UeI							
	N/A	N/A							
	EXTINGUISHING MEDIA Water, CO2 spray - generally none required.								
SPECIAL FIRE FIGHTING PROCEDURES None normally required.									
UNUSUAL FIRE AND EXPLOSION HAZARDS None Known									
Reactivity Data	STABILITY	<table border="1"> <tr> <td>UNSTABLE</td> <td></td> </tr> <tr> <td>STABLE</td> <td>X</td> </tr> </table>	UNSTABLE		STABLE	X	CONDITIONS TO AVOID None known		
	UNSTABLE								
	STABLE	X							
	INCOMPATIBILITY (Materials to avoid) None known								
HAZARDOUS DECOMPOSITION PRODUCTS None known									
Toxicity Identification	HAZARDOUS POLYMERIZATION		CONDITIONS TO AVOID None known						
	May Occur	Will Not Occur	X						
	ORAL/PARENTERAL No data available for this compound.								
	Dermal (acute) No data available for this compound								
Toxicity Identification	EYE No data available.		INHALATION No data available						
	CHRONIC No known effects established. Possible allergic reaction.								
CARCINOGENICITY:		NTP? Not listed	IARC Monographs? No	OSHA Registered? No					

Hazard Information	ORAL INGESTION		None known. Material is generally recognized as non-toxic at the levels indicated.		
	Effects of Exposure	EYE CONTACT		May cause transient eye irritation.	
		SKIN CONTACT		May cause mild redness.	
		INHALATION		May cause allergic reaction if dust of dry composition inhaled. Avoid contact with any dust.	
	Emergency First Aid	ORAL INGESTION		If ingested seek medical attention immediately. Do not induce vomiting.	
		EYE CONTACT		Flush with cool water 15 minutes. Seek medical attention.	
SKIN CONTACT		Flush with water. Seek medical attention.			
INHALATION		If allergic symptoms are suspected, seek medical attention.			
Spill or Leak	STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED For release of spill of large quantities of material, wear appropriate protective clothing including gloves, goggles, and boots. The use of a NIOSH/MSHA approved respirator may be required. Isolate area of spill by diking and stop source of leak. When necessary, neutralize using acid/gas solution. Add absorbent (if appropriate, shovel) or sweep up. Place in an approved DOT container and seal. Wash contaminated clothing. In the event of a large spill, use emergency telephone number on front of this sheet.				
	WASTE DISPOSAL METHOD (Comply with applicable federal, state, and local regulations.) Dispose of contaminated product, empty containers and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate federal, state and local regulatory agencies to ascertain proper disposal procedures.				
Special Protection Info	RESPIRATORY PROTECTION (Specify Type) A properly fitted MSA/MSHA approved organic respirator should be worn if any dust is present.				
	VENTILATION	LOCAL EXHAUST	Exhaust systems	SPECIAL	None normally required.
		MECHANICAL (general)		At point of use.	OTHER
	PROTECTIVE GLOVES		Rubber or neoprene type.		EYE PROTECTION
OTHER PROTECTIVE EQUIPMENT Wear appropriate close-weave coveralls.					
Special Precautions	PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Handle material according to standard procedure. Do not take internally avoid contact with skin, eyes and clothing. Store in cool, dry well ventilated place.				
	OTHER PRECAUTIONS While none of the components of this material are at a level to be hazardous, precautions should be taken to avoid eye ingestion, inhalation, or allowing substance to remain on the skin for prolonged periods of time. Individual susceptibility may result in allergic reactions.				
This MSDS is based on a limited review of Pfizer's files and standard toxicology handbooks.					
The information herein is furnished without warranty of any kind. This information should be used only as a supplement to information already in your possession concerning this product. The determination of whether and under what conditions the product should be used by your employee is yours to make.					